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EDITORIAL.

TUBERCULOSIS AND SCHOOL HYGIENE.

THE secret of social progress and physical betterment of a race lies with its children. The most rational means to secure the elimination of tuberculosis from a people is to protect its children. The truth of these statements was abundantly exemplified at the recent International Congress of School Hygiene held in London during August last. Valuable discussions took place on the occurrence of tuberculosis in school-going children. It was shown that at present the means employed in this and most other countries for the detection of tuberculous disease, or a predisposition thereto, in scholars and teachers was miserably inadequate. Skilled medical inspection and supervision of teachers, scholars, and school premises would do much to lessen the prevalence of tuberculosis. For many children, offspring of consumptive parents, and those otherwise predisposed to tuberculosis, open-air schools, after the German method, are urgently needed. Children living at home with tuberculous parents or other relatives might well be dealt with according to the plan originated by the late Professor Grancher, and boarded out in healthy country homes. Instruction in anti-tuberculosis measures should be given in every school. A tactful school-nurse can exercise far-reaching influence with parents, and do much to bring about a hygienic reformation in the home. School sanatoria for tuberculous children must be established. Every local Education Authority should be required to ascertain not only the "revealed" cases of tuberculosis in its schools, but also those who are in any way predisposed to the disease, and, as far as is possible, all cases of tuberculous children in the homes. It cannot be too emphatically insisted on that tuberculosis in children is nearly always home-born and home-grown. Progress in thought and advancement in action would be considerably aided if it were possible

to secure better co-ordination of knowledge and co-operation of effort by the formation of an International Association for the Study, Prevention and Treatment of Tuberculosis in Children.

THE PROTECTION OF INFANTS FROM TUBERCULOSIS.

The growing apprehension of the truth of the contention of Von Behring, Calmette, and others, that much of the tuberculosis met with in adolescents and adults is the outcome of an infection in infancy and childhood, is, very rightly, leading to a more serious study of the disease in its beginnings. In the recent Congrès International des Gouttes de Lait, held at Brussels in September, the question of tuberculosis in infancy was dealt with in several important communications. Post-mortem evidence goes to show that in infants dying from all causes, and submitted to autopsy, tuberculous foci are found in from 7 to 8 per cent. The best opinion regards the occurrence of tuberculosis of bovine type in infancy as exceptional. There is reason to believe that practically all tuberculosis occurring in the human subject at all ages has a human source. If this be so, the problem is much simplified. There is manifestly the utmost need to prevent infection by securing for the new-born a strictly hygienic environment, and such nourishment and care as shall develop its natural resisting powers to tuberculosis and other deranging influences. In the science and art of puericulture the anti-tuberculosis movement may find its most hopeful means for effective advance.

TUBERCULOSIS AND THALASSOTHERAPY.

Accurate knowledge regarding the influence of "sea-treatment" on tuberculous affections is sadly lacking. Dr. William Ewart, in opening a recent discussion before the British Balneological and Climatological Society, has rendered valuable service in summarizing the present position of thought and practice. He shows that all cases of "surgical tuberculosis" and so-called scrofula may be considered "suitable," as may "latent" or "threatened" cases of pulmonary tuberculosis, while for "declared" consumptives mountain residence is nearly always advantageous. The seaside for many is undesirable. For certain "chronic quiescent phthisis" cases some carefully-selected coast-stations often seem to offer positive advantages. Present-day opinion and procedure certainly favour inland and upland stations for most consumptives, and even for tuberculous children it would appear as though the advantages of a marine climate had been overestimated, or at least the undoubted disadvantages not sufficiently defined. The whole subject is highly complex, and the wise physician should always give an unbiased study to the "reaction" of each patient to a particular climatic environment.

SPECIAL ARTICLES.

THE ATTITUDE OF NEW ZEALAND
TOWARDS CONSUMPTION.

By J. MALCOLM MASON,

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Chief Health Officer for the Colony of New Zealand.

EVIL in many instances is only disguised good. The appearance of plague in 1899 in New South Wales was the causative agent in the setting up of a Commission to report on the sanitary condition of New Zealand. The result of the report of that Commission was the Public Health Act of 1900. Sir Joseph G. Ward (now Premier of the Colony) had charge of the Bill, and experts could not hope for a more energetic political head. The Public Health Act of 1900, while it has many defects, is undoubtedly far in advance of most statutes under which the conservation of the public health is carried out. In most instances the permissive "may" has been replaced by the mandatory "shall." "The local authority may of its own motion, and shall when the Chief Health Officer directs." This form of sentence gives the keynote of the Act. A hospital or sanatorium must be erected in any specific district if the Chief Health Officer directs, and it has been in virtue of this section of the Act that much of the provision has been effected. It may be well to point out in what respect the hospitals in the colony differ from those of Great Britain. In the old land provision for the sick, saving those mentally affected, is mainly the result of private charity. In New Zealand, Boards have been set up for specific areas, and all hospitals within that area are controlled and financed by the Boards. An estimate of the expenditure necessary is made, and the Central Government and the local authorities situated within the zone are notified. The local authorities are required to pay to the Board one-half of the sum necessary, while the other half is paid by the Government from the Consolidated Fund. This much it is necessary to set out in order to understand clearly the significance of the campaign which has been waged unceasingly, and with such success, against consumption by the Department of Public Health.

New Zealand, as most will be aware, is situated roughly between 34 and 47 degrees of south latitude, and between 166 and 179 parallels of longitude. The area of the two islands approaches very nearly that of England and Scotland, but in place of Britain's 48,000,000 of people

this Britain of the south has less than 1,000,000 (875,000). The last census showed that there were 42,000 Maoris and half-castes.

One of the first steps taken was the placing of tuberculosis upon the list of infectious diseases compulsorily notifiable. This was done in 1901. Although the colony has for many years had the lowest general death-rate, and the lowest death-rate from tubercle in the world, I decided at an early stage of the Department's course steadily to strive to reduce the incidence of and mortality from this disease. One of the first steps was to bring home to the people the gravity and importance of the enemy; and, secondly, to emphasize at every opportunity that the disease was mainly spread from one person to another by means of infected sputum. Lectures were given by the various officers in their several districts, and placards such as the following distributed—

NOTICE.

CONSUMPTION.—TUBERCULOSIS.

CONSUMPTION, a form of tuberculosis, is an infectious disease which, in Great Britain, causes the death of some 70,000 persons annually. It causes much sickness and many deaths in New Zealand, despite the excellence of our climate, chiefly through ignorance of its infectivity and carelessness on the part of the sufferer and others. It is in a great measure preventable. Consumption is spread chiefly by the dried expectoration of those suffering from the disease being blown on to food and swallowed by others, or floating as dust in the air, being inhaled by individuals not quite healthy or predisposed from birth to chest diseases. A small quantity of the discharge contains countless minute germs. It can be easily understood, therefore, how important it is that no one suffering from consumption should spit anywhere but into a spittoon containing a disinfectant (carbolic acid 1-20), or on to rags which can be burned at once. Every care should be taken to destroy all discharges immediately, or, if that be not possible, they should not be allowed to get dry before being burned. Consumption is a disease which affects some of the domestic animals. The Government is endeavouring to stamp it out from among the cattle in the colony; but the scalding of milk before its use, especially for children, is a wise and necessary precaution.

By observing the following precautions, the public can do much to help the authorities in their war against this veritable scourge of modern times.

PRECAUTIONS.

1. Consumption having been declared by the Governor an infectious disease, all cases must be notified to the District Health Officer in accordance with Section 26 of "The Public Health Act, 1900." The duty of notification rests with the occupier of the house where the patient resides, and with the medical man in attendance.

2. No person ought to spit in a public street.

3. Any house or room which has been occupied by a person suffering from Consumption must be thoroughly disinfected before being occupied by anyone else.

4. When it can be avoided, no one ought to sleep in the same bed or room with a person suffering from Consumption.

5. All expectoration from a person suffering from Consumption should be burned. The practice of spitting in handkerchiefs or on the floor ought not to be allowed. The affected person should spit into a spittoon containing a solution of carbolic acid (one part of the acid to twenty parts of water), or on to pieces of rag which should afterwards be burned. ***So long as the expectoration is kept moist there is no great danger of infection to others.***

6. Persons suffering from Consumption should occupy well-ventilated rooms. An ordinary chimney is one of the best ventilators.

7. Persons who have an inherited predisposition to the disease should, where possible,

(1) Choose outdoor rather than indoor occupations.

(2) Live in houses situated on dry porous soils, and protected from the prevailing winds.

8. If these precautions are taken, little or no danger need be apprehended by those coming in contact with the sufferer.

J. MALCOLM MASON, M.D.,
Chief Health Officer.

Notices similar to the above were circulated through the help of the postmasters all over the colony. The placards in the railway-stations also played their part as constant reminders of the power of King Tubercle, the importance of cleanliness, and the necessity for the destruction of all infected sputa. A striking pamphlet was also issued broadcast. In every instance where a case of consumption exists the householder and the patient's friends are handed a copy. The aid of the profession generally was invoked all over the colony with the most gratifying results. It was felt that, until adequate provision had been made for the institutional isolation and treatment of all consumptives unable to obtain treatment with safety to the general public in their own houses, it would be unfair to insist upon applying all the regulations and restrictions necessary in respect to such diseases as scarlet fever, enteric fever, etc. Further, in order to lessen as far as possible the disabilities which attend such a prolonged illness as phthisis, the medical practitioners were advised that it was not necessary in all cases to notify the local authority in addition to the district Health Officer, as in the case of all other infectious diseases. A consequence of this was that no unfair publicity was given to the case, while the general safety was in a very great measure conserved. On receipt of a notice that a person was suffering from consumption, an officer of the Department calls upon the medical attendant and asks if the surroundings of the patient are such as are satisfactory from the invalid's point of view, and that all necessary precautions are being taken to safeguard the other inmates of the house. Should the medical attendant feel satisfied that all proper precautions are being taken, nothing further is done. Should the patient change his residence or die, an officer of the Department attends to disinfect the room and contents. It is an offence for a landlord to let a house wherein a case of consumption has

been unless the building has been properly disinfected. In this purely official way great good is effected, but one of the most gratifying signs is the constant consultation by patients and their friends with the officers of the Department on all points of a public and preventative nature. When the self-sacrificing wife refuses to guard her own health, an appeal to the ailing husband will often bring about the separate sleeping-room or bed. A quiet talk with the patient about the importance of the absolute destruction of the sputum, the value of open air, and a reversion generally to a more natural mode of life, often turns a potential danger into a positive good. The Public Health Act provides for the payment for goods destroyed in the interest of the common weal; but one often finds when death has removed the case, that the relatives will go as far as to destroy bed, bedding, and all that could possibly have been contaminated, at their own expense.

In 1901 the Government purchased 1,000 acres of land on a range of hills about six miles from Cambridge—a district long celebrated for its value in lung affections. Here a sanatorium has been established capable of accommodating sixty patients. A large house which was purchased with the land has been turned into an excellent administrative block, kitchen and bedrooms for matron, nurses and maids, medical superintendent's office—where patients, sputa, etc., can be examined—clerk's room, dining-room for female patients, etc. A fine open-air balcony skirts the whole of one side of this building. The sanatorium proper consists of a series of completely detached shelters of an artistic and most satisfactory type. They are built to accommodate one, two, and four patients. They consist of wood, and are raised on piles, so that there is a clear space between the ground and the floor. The inside walls are of close-set tongued and grooved wood, and painted a pale blue with *Bon-Accord* paint. This gives a fine glossy face, easily washed. The ends of the shelters are really French doors, half glass. They can be opened to the entire width of the ends. In addition, there are two windows which can open. The board nearest the roof can be let down in sections, and the space behind is open to the air. One end of the building is always open, so that in the fullest sense of the word the patient sleeps in the open air. I have seen no shelters, either in Britain or on the Continent, which are better. In this opinion I am confirmed by visitors from all parts of the world. All the shelters are lit by electric light, and bells are fitted so that in the intervals of the night-nurse's visits the patient can easily call her attention. The shelters are arranged in three colonies, one for women in front of, and not far from the main building, one for those men able to pay, and one for those unable to contribute anything. The hills are wooded with beautiful native bush, and the view from the highest peak (1,170 feet above sea-level) on a fine day is unequalled in any part of the world.

This institution is entirely supported by the Government, less the payments made by patients. The total cost of the land, administrative block, shelters, water-supply, electric installation, etc., was £12,172, an average cost per bed of £202 17s. 4d.¹ When one remembers the altitude, and the greater cost of labour in the colony, the capital expenditure compares very favourably with most other institutions. The average cost per patient per week is, roughly, £2 10s. Now, this cost per head leads me to set out a point of some importance to those about to establish a sanatorium. The question is whether a high place should be selected for a site. In a country such as this, where the air is generally clear and free from smoke and dust, I am constrained to say that the most careful consideration should be given to the question of whether the increased cost which altitude always entails ought not to be saved. In the early days of "Te Waikato" every ton of goods, coals, timber, etc., meant an addition of £1 to the cost of the articles: this is a serious matter. Since the inception of the institution in 1901 there have been 406 patients, with an average of 21 per cent. of "cures."

When one bears in mind that selection of cases was hardly practicable until lately, and even now leaves much to be desired, I think we have cause for congratulation. The fact that patients come from all parts of the colony, that they have often to wait months before they can be admitted, that it was looked upon as the Mecca of all who suffered from consumption, and an entrance was solicited by every poor suffering soul; when, further, it belongs to the people generally—in that it is run by the colony—it can easily be understood why "selection" should be difficult. Here, as in every other country, an unreasoning fear affected some of the public in consequence of the campaign. Hotel-keepers, boarding-house keepers, etc., fought shy of taking in anyone suffering from consumption, and in consequence the sufferer's lot in some cases was made harder.

Advantage was taken of this to appeal to the Hospital Boards to make provisions by way of annexes for all the sick in their respective districts, and large sums of money were collected from the public for this excellent object. Many of the Boards have made provision, and soon, I trust, we may be able to say that no person suffering from this disease, and unable to pay for or receive proper treatment outside of an institution, need ask in vain.

Some criticism, occasionally of an unfair character, has been made with regard to our regulations with respect to sufferers from overseas arriving in New Zealand. Under an Act called the Immigration Restriction Act—the child of our erudite and talented High Commis-

¹ In addition to this the cost of road-making up the mountain should be added. This amounted to about £2,200.

sioner, the Hon. W. P. Reeves—passengers from oversea suffering from an infectious disease may be prohibited from landing. Now, while it would be inhumane to refuse to any invalid from another country the benefits which may come from our excellent climate, there can be no doubt of the justice of our refusal to allow New Zealand to become the dumping-ground of all indigent incurables who may elect to journey thus far from their homes. Apart altogether from the inhumanity of divorcing a dying, impecunious man from his friends, and all that might go to make his last months bearable, it is unfair to expect that the ratepayers of the colony should be called upon to support the indigents of another. The shipping companies trading to New Zealand have been notified of our regulations, and I have drawn attention in the medical journals in Britain to them, and yet nearly every vessel arriving here brings some one who ought never to have left the old country. Imagine the feelings of a poor soul who has been advised by his medical attendant to undertake the 13,000 miles' journey after the will-o'-the-wisp health being told by the Port Health Officer here that he cannot land. Can there be anything more cruel? and yet, who can blame the authorities here?

It is no part of my present task to discuss the value or otherwise of a long sea voyage in the treatment of consumption; abler pens than mine have discussed the pros and cons, but one has only to voyage in a sailing-vessel with half a dozen phthisical patients to understand the futility of such advice. One such ship I knew: out of six saloon passengers, three were suffering from consumption. The cabins and w.c.'s all ventilated into the dining-saloon. We had several spells of bad weather, when everything was shut down. The patients were all taking creosote in one or other form. If one had been asked to frame a set of conditions calculated to depress their opsonic index and endanger the health of the other passengers, he could not have improved on the conditions which obtained on board the good ship. Creosote may have its value in the treatment of consumption, but to live for days at a time in an atmosphere of second-hand creosote is neither appetizing nor calculated to make for health.

Once again I would draw the attention of my confrères in Britain to the fact that indigent sufferers are not allowed to land in New Zealand. That advanced cases, even if they have money, must enter into a bond—if required—to reside in a sanatorium at their own expense. Of course, returning New Zealanders are admitted without question.

Now, with regard to statistics, I have already said that we have the lowest death-rate in the civilized world for consumption, as is evidenced by the following tables:

COMPARATIVE DEATH-RATE FROM ALL CAUSES IN NEW ZEALAND FOR THE PERIOD 1895 TO 1905.

Country.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
New Zealand ...	9'91	9'10	9'14	9'84	10'24	9'43	9'81	10'50	10'40	9'57	9'27
Queensland ...	11'38	12'10	11'33	12'66	12'07	11'73	11'88	12'08	12'38	10'11	—
New South Wales ...	11'79	12'30	10'88	12'48	11'82	11'16	11'68	11'95	11'59	10'62	10'13
Victoria ...	13'25	13'35	12'90	15'94	14'28	12'75	13'22	13'40	12'90	11'92	12'10
South Australia ¹ ...	11'25	11'48	11'24	13'06	12'14	10'64	11'11	11'79	10'71	10'22	10'14
Western Australia ...	17'78	16'45	16'97	16'05	13'76	12'92	13'36	13'63	12'60	11'91	10'83
Tasmania ...	11'38	11'63	11'53	13'51	12'25	11'05	10'45	10'84	11'92	11'01	10'23
England and Wales ...	18'7	17'0	17'4	17'5	18'2	18'2	16'9	16'2	15'4	—	—
Scotland ...	19'4	16'6	18'4	18'0	18'1	18'5	18'0	17'2	16'6	—	—
Ireland ...	18'4	16'6	18'4	18'1	17'6	19'6	17'8	17'5	17'5	—	—
Denmark ...	16'8	15'6	16'5	15'5	17'3	16'9	15'8	14'6	14'6	—	—
Norway ...	15'7	15'2	15'3	15'3	16'9	15'9	14'9	13'9	14'8	—	—
Sweden ...	15'2	15'6	15'4	15'1	17'7	16'8	16'0	15'4	15'1	—	—
Austria ...	27'7	26'4	25'6	24'9	25'4	25'2	24'2	24'7	—	—	—
Hungary ...	29'7	28'9	28'5	28'0	27'2	26'9	25'4	27'0	26'1	—	—
Switzerland ...	19'1	17'7	17'6	18'2	17'6	19'3	18'0	17'2	17'6	—	—
German Empire ...	22'1	20'8	21'3	20'5	21'5	22'1	20'7	19'4	—	—	—
Netherlands ...	18'6	17'2	16'9	17'0	17'1	17'8	17'2	16'3	15'6	—	—
France ...	22'2	20'0	19'5	20'9	21'1	21'9	20'1	19'5	19'2	—	—
Italy ...	25'0	24'0	21'9	22'9	21'8	23'8	21'9	22'1	22'2	—	—

DEATHS FROM ALL TUBERCULOUS DISEASES.

Decennial Table, 1896-1905, showing the Death-rate from Tuberculosis per 10,000 Living, and Percentage of Total Deaths in New Zealand.

Year.	Mean Population.	Number of Deaths from Tuberculous Diseases.	Rate per 10,000.	Percentage of Total Deaths from all Causes.
1896 ...	706,846	680	9'62	10'57
1897 ...	721,609	763	10'57	11'57
1898 ...	736,260	769	10'44	10'62
1899 ...	749,984	795	10'60	10'35
1900 ...	763,594	752	9'85	10'44
1901 ...	777,968	775	9'96	10'15
1902 ...	797,793	802	10'05	9'58
1903 ...	820,217	769	9'38	9'02
1904 ...	845,022	799	9'46	9'88
1905 ...	870,000	678	7'79	8'41

Though our death-rate is low, it is a most regrettable fact that of the total deaths from consumption, 55 per cent. were New Zealand born. To counteract this terrible exaction yearly made by tuberculosis is the main *raison d'être* of the efforts which the Department is making. Young in years as the age of countries are reckoned, we are trying to learn wisdom from our fathers. New Zealand has been pointed to as

¹ Excluding the Northern Territory.

the battle-ground whereon much experimental legislation has been fought, but a country which has given practical expression to the aspirations of the Old-World lover of his kind in such things as old age pensions, industrial arbitration, and limitation of holdings, may fitly ask friendly consideration of our efforts to stem the onslaught of the "great white plague."

TUBERCULOSIS IN NORWAY AND ITS SANATORIA FOR CONSUMPTION.

By J. SÖMME,

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NORWAY is by no means so fortunate as England in its means for dealing with tuberculosis. Whilst pulmonary tuberculosis in England has been declining for the last fifty years, in Norway it has been steadily increasing until the last decade. During the three years, 1902 to 1904, the mortality was 2.4 in 1,000 inhabitants; for the last ten years it has fallen somewhat more than 15 per cent. The decrease is greatest in urban districts. In the town of Bergen, where the crusade against tuberculosis has been most energetically carried on under the leadership of Dr. Klaus Hanssen, senior physician to the Bergen Hospital, the mortality has fallen about 50 per cent. in the course of the last eleven years, and in other districts decrease has occurred up to 30 per cent. In some country districts the mortality has been considerably higher than in most of our towns. In the northern districts the mortality is on the increase. The great poverty and wide area of Norway make it most difficult to carry out hygienic supervision and sanitary reforms.

Anti-Tuberculosis Measures.

The most important agents in the crusade against tuberculosis in Norway are our tuberculosis law, our nursing-homes, and our sanatoria. Norway was the first country in the world to procure an up-to-date tuberculosis law. This came into force January 1, 1901. Its chief provisions are as follows: All infectious "open" cases are reported to the district medical officer. If the doctor's instructions as to hygiene are not carried out, the sanitary authorities are empowered to remove the patient to a hospital. In the event of death or change of residence of the patient, necessary disinfection is carried out. The

King can determine regulations in general for factories, offices, hotels, sanatoria, assembly-rooms, etc.

The existence of the law is due to the energetic work of the Government's chief medical officers, Dr. Holmboe, in Christiania, and Dr. Klaus Hanssen, in Bergen.

As far as can be judged by the short period the law has been in force, it would appear to have already borne fruit, considering that tuberculosis has decreased somewhat after its coming into force, and the law also seems to have caused but little inconvenience.

Nursing-Homes for Consumptives.

When one considers the bad hygienic conditions that exist in the poor homes where tuberculosis is most prevalent, it is easy to realize the importance of all efforts to isolate the patients, especially during the latter period of their illness. Consumptives are, as a rule, unwilling to live far away from their relatives during the closing days of their existence, and the distances within the country are great and the population scattered. So-called nursing-homes have, therefore, recently been built in the various districts of the country. These homes are quite small, containing, generally, six to ten beds, sometimes a few more. These homes are quite plain, but thoroughly comfortable. The staff consists, as a rule, of a nurse, who also superintends the general management, and a maid-of-all-work. A local doctor attends the patients. The cost of building these nursing-homes seldom exceeds £50 to £60 a bed, and their maintenance is also extremely cheap—far cheaper than that of sanatoria. They are primarily intended for the nursing of incurables, and thus prevent infection in unhygienic homes; but they can also, to a certain extent, replace the expensive sanatoria, as they can provide for those patients who have to wait for admission to the sanatoria, when these, as generally, are overfilled. They also admit those cases with fever, or whose condition for the time being in other ways makes the benefit of the sanatorium treatment doubtful. These homes can thus help sift the material for the Government sanatoria, and relieve their work. A number of these homes are already erected, or in the process of erection, all over the country. Altogether about 300 beds are available in these nursing institutions.

Means are supplied by private subscriptions and by the "communes," banks, and donations from charitable institutions. The establishment of nursing-homes for consumptives is a movement of Norwegian origin, a fruit of our tuberculosis law and the special conditions existing in Norway. Later it has been adopted by other countries as a practical, workable, and especially cheap link in the crusade against tuberculosis. The sphere of action of the nursing-homes should not be too limited. If only the hopeless and dying

patients were admitted, the homes would consequently soon lose their popularity, and their help fail to be applied for. One of our sanatoria originally arranged for a "cure" department and a "nursing" department. The former was continually overcrowded, the latter was left quite empty. Under no circumstances ought the homes to be attached to workhouses or similar institutions, but rather to hospitals.

Sanatoria.

As will be easily understood, it was very natural for the Norwegians, whose country was so much sought after by foreigners, to build sanatoria.

Of these a number have gradually been erected. To begin with, they housed both patients and healthy visitors; gradually, however, the tuberculous cases were accommodated more and more in special sanatoria, where the hygienic and dietetic treatment gained footing. When Dr. Andvord, Vice-President of the International Tuberculosis League, in 1885 introduced winter treatment at one of our mountain hotels, an impetus was given to the erection of special sanatoria for tuberculosis. Funds set aside from the Middle Ages for the care of lepers have now, owing to the marked decrease of leprosy in Norway, been devoted to the care of tuberculous patients. This decrease in leprosy has also led to the conversion of the leper hospital at Recknes (situated near the beautiful little coast-town of Molde) into an up-to-date sanatorium by alteration of, and addition to, the original building. The hospital has sixty beds, and is under Government control. The patients pay 1·20 krone (1s. 4d.) a day.

A sum of £500—the interest on the original Recknes Hospital fund, value about £12,000—is devoted to beds free of all charges.

Lyster Sanatorium, which has cost about £40,000, has been built out of the old St. Jørgen's fund. There is also a sum of £33,000 and some property in Bergen belonging to the same fund.

The Lyster Sanatorium, near the end of the Sognefjord, is in every respect a modern institution. It is beautifully situated in the subalpine zone, about 1,500 feet above sea-level, and is splendidly sheltered from wind. It was originally intended for 96 patients, but can on account of its size, when necessary, house 130. It is amply supplied with electric power for lighting and machinery, etc. It is situated about 110 English miles from the open sea, so the climate is practically that of the inland, with a bracing winter, snow lying on the ground for several months of the year. The summer months are fairly dry.

Marine Sanatoria for Children.

Norway has two hospitals situated on the coast for the treatment of surgical tuberculosis in children. Fredriksværn Hospital, situated on the south-east coast of Norway, is arranged for 85 patients, but can

receive over 100 patients in the summer-time. It was erected under the patronage of H.M. Queen Sophia. The funds for this hospital were obtained from the Royal Family, private persons, and charitable institutions. The Government gives a yearly contribution of £800, in order to reduce the expense per diem for each patient to 1 krone (1s. 1½d.). The hospital is built of timber, and is exceedingly cheap; it is valued at £100 to £110 a bed. It, nevertheless, satisfies all requirements, and treatment here has shown excellent results. The hospital's physician and manager is Dr. Sinding-Larsen.



MESNALIEN SANATORIUM, NORWAY.

A hospital similar to the above, but on a smaller scale, is built at Hagevik, near Bergen. It is being enlarged so as to hold 100 beds. It, too, is supported by voluntary subscriptions. Dr. Gade is the physician of this sanatorium.

Apart from the Reknes Sanatorium fund and the property of private sanatoria, a sum of £140,000 represents the capital devoted to the campaign against tuberculosis in Norway.

Private Sanatoria.

All the private sanatoria are situated in the interior of Southern Norway. This district possesses a climate which, both in summer and

winter, is scarcely to be surpassed by any in Europe. Some of these sanatoria are composed of old buildings, enlarged and improved by the addition of pavilions, etc. These, by their relatively very cheap and at the same time fully satisfactory accommodation, satisfy the demands of the middle class. Others of these sanatoria are quite new, and have every modern appliance. All these sanatoria are much frequented by foreigners.

Mesnaliën Sanatorium may be described as a type of these sanatoria. It was started in the year 1900, at the suggestion of the heads of the civil and military institutions. Situated 1,800 feet above sea-level, it is, together with many other sanatoria, within easy distance of the town of Lillehammer, in Gudbrandsdalen, a few hours' journey by train from Christiania. It satisfies the demands of modern hygiene, and is at present the most luxurious sanatorium in Scandinavia. The electric light is obtained from a neighbouring waterfall, and the rooms are warmed by steam radiators. The sanatorium is intended for the upper-middle class. There are forty beds.

Besides Mesnaliën, the following sanatoria may be mentioned: Gjosegaarden, near Kongsvinger, at the Swedish boundary, three hours from Christiania. It is erected on an old estate, and has been considerably enlarged and added to. The proprietor is Dr. Jonassen. Kornhaug Sanatorium, near Lillehammer, is under the management of Dr. Holmboe. Granheim Sanatorium, also near Lillehammer, is conducted under the proprietorship of Dr. Wiegard. At Trygstad, near the little town of Hønefos, there is a small sanatorium. Dr. Mjøs has a sanatorium near Christiania. All these five sanatoria have twenty to twenty-five beds, and are at a height of 500 to 1,000 feet above sea-level.

Grefsen, a former hydro-therapy establishment near Christiania, is arranged to accommodate ninety lung cases.

All the Norwegian private sanatoria are exceedingly cheap, prices varying from 5s. to 9s. a day.

Bovine Tuberculosis.

Finally, a few words about the campaign against bovine tuberculosis in the country, which has been very energetically carried on under the leadership of Dr. Malm, the head of the Veterinary Department in Christiania. As early as the year 1892 Koch's tuberculin was prepared in the veterinary laboratory, and was distributed free of charge, on certain conditions, among veterinary surgeons to determine the spread of tuberculosis in cattle. In the course of the ten years 1895 to 1905 about one-fifth of the cattle of the country—*i.e.*, about 180,000—were tested with tuberculin. Only 5·8 per cent. of these have shown themselves tuberculous. In 1895 the Government undertook the expense of these

investigations on certain conditions. In 1905 the following regulations were made in connexion with the above-mentioned investigations: Isolation of the infected animals, disinfection of cowsheds, slaughtering of cattle with tuberculous udders, and other forms of open and obvious tuberculosis. Finally, tuberculin examination of all cattle bought in for farming purposes. The animals that react are to be branded and isolated; all the expenses thus entailed are paid by Government. Since 1897, by the advice of Dr. Malm, compensation is given by the Government to all cattle-owners who slaughter their tuberculous cattle. About one-third to one-half of the loss is in this way compensated. Animals imported must pass through the quarantine-station and must undergo the tuberculin test. The campaign against bovine tuberculosis is partly due to voluntary agreement on the part of cattle-owners and partly to Government control. This control is extended, not only to tuberculosis, but also to other infectious diseases among domesticated animals; thus, notification of infectious cases, isolation of such cases from the property, cowsheds, or stables of others, etc. Statistics go to prove that bovine tuberculosis is not very extensive in Norway.

DISCUSSION.

THE CONSTRUCTION OF SANATORIA.

THE sanatorium occupies a prominent and very necessary position in the combat with tuberculosis. The requirements of the individual and the needs of the community demand means for institutional treatment of consumption. The sanatorium furnishes valuable prophylactic and therapeutic agencies, and serves as a conspicuous educational influence. Inexperienced enthusiasts are apt to overestimate the advantages of a sanatorium, while short-sighted economists sometimes exaggerate its deficiencies. It is necessary to recognize that the sanatorium has very definite limitations. The ideal sanatorium yet remains to be discovered. We are still lacking a scientific conception of the essential principles which should govern the construction of establishments for tuberculous cases. Extravagance and luxury on the one hand, and penuriousness and discomfort on the other, are both to be avoided. The requirements of various classes of patients call for special consideration. Children need a sanatorium where home and school influences may be maintained. The best interests of working-class patients may, perhaps, be most wisely met in simple and comparatively inexpensive colonies, on the tent or cottage system, according to climatic and other considerations. At a time when philanthropic effort, municipal enterprise, and national action in almost all civilized countries are finding visible expression in the establishment of sanatoria, it is highly desirable that steps should be taken to ascertain that this movement is in accordance with the best architectural principles, and adequately meets the scientific requirements of the practical sanitarian and experienced physician.

As a contribution to this much-discussed matter we are enabled, through the courtesy and consideration of a number of experts in sanatorium construction and management, to present a series of views and opinions dealing with the problem from many different standpoints. We believe that the notes, suggestions and illustrations here collected will prove of much practical service, and may serve to secure a clearer understanding of the subject by the generous humanitarian, greater co-operation between architects and physicians, and that co-ordination of thought and experience which is essential to real progress.

Principles of Sanatorium Construction.

By FREDERICK WHEELER,

F.R.I.B.A.,

Architect of the Mount Vernon Hospital, Country Branch, at Northwood, Middlesex.

That great differences of opinion exist, and will continue to exist, among those who devote themselves to the treatment of consumptives can scarcely be denied; and certain it is that no one has yet planned or built a sanatorium the arrangements of which are accorded the unanimous and unqualified approval of medical experts. It is, indeed, a rare experience to find any two among the latter holding identical views; and when doctors disagree what can a poor architect do? Notwithstanding much difference of opinion, there are certain things which must be regarded as absolute essentials in a sanatorium, and others which, at the least, are most desirable. A practical combination of those would probably produce a result somewhat as follows: The buildings would be situated on dry soil, well away from main roads, in extensive grounds, and surrounded by pine-woods. The sanatorium proper would have a south aspect, with a wide terrace running along its entire front. The patients' single bedrooms would open direct on to this terrace, at the end of which provision for inclement weather would be provided in the shape of winter gardens. A main corridor would extend the whole length of the building to the rear of the bedrooms, and all sanitary accommodation, concentrated in spurs, connected with it by cross-ventilated lobbies. Considerations of economy, cleanliness, comfort of patients, and provision of fresh air and light, would suggest that all rooms be finished with rounded angles on all surfaces, all cornices and mouldings likely to harbour dust and dirt being avoided. The walls would be finished to a hard non-septic face, and the wood-work stained and varnished. The windows would be large, and carried as close to the ceiling level as possible, and fanlights provided in north walls to allow a through current of air. The heating would be by means of open fires, which avoid the stiffness associated with most other systems of heating, allow of extra ventilation, and are undoubtedly much more cheerful and homelike in appearance—a point of no little importance.

A single-storied building is probably preferable to one having two or more stories. If, however, financial considerations make the latter necessary, each story should have an open-air balcony of sufficient width to allow of patients sitting or lying out, and all patients' rooms should have a south aspect.

Single bedrooms are strongly recommended, even though their

provision add to the cost of the building. They provide for a desirable privacy and feeling of homeliness, removing the otherwise ever-present feeling of being in an institution, which is so depressing to many, and by so doing tend to remove the constant desire to return home, which is often difficult to deal with.

Entrances, administrative and other offices, should be to the north of the patients' block; beyond this they do not call for any very particular description in this connexion, being in proportion to the number of patients treated, and arranged and equipped according to usual hospital practice.

Points in the Construction of Sanatoria.

By FRANCIS E. JONES,

F.R.I.B.A.,

Architect of the London Open-air Sanatorium, Pinewood, Berkshire; and Glen Afton Sanatorium, Ayrshire.

In regard to a sanatorium for consumptives, the problem of what to build and where to build it has several inherent difficulties. More often than not the answer is—just a compromise. The salient points can only here be dealt with summarily: (1) The ideal site is usually defined as “four miles from a railway-station and village.” This means no gas, no water, no electric light, no public drainage. To supply these by private installation necessitates heavy outlay and expensive upkeep. A site therefore should be sought giving some or all of these necessities combined with isolation sufficient for all practical purposes. (2) To a smaller extent similar considerations apply to the laundry, perhaps even to the pathological laboratories. Each institution likes to run its own comparatively insignificant plant. Could not sanatoria, hospitals, and kindred institutions combine and build one laundry and equip a common laboratory, and so on? Motor vans facilitate collection and delivery, and the money-saving, both original and annual, would be great. (3) A few minor problems would vanish if distinct sanatoria could be built and the sexes absolutely separated. (4) For the buildings, the “hotel” type, either one block, or two or three connected by open covered ways, is to be recommended, for concentration means simplification of the hot-water supply and heating and drainage, as well as more complete supervision of both staff and patients. (5) The “village” or scattered type is perhaps theoretically *the ideal*, but it should only be entered upon when there is already on the scene an enthusiast as the prospective resident doctor, one who firmly believes that “the consumptive patient must have no connecting passages and



PINEWOOD SANATORIUM, WOKINGHAM, BERKS.

such-like; he must face the battle and the breeze six times a day on his way to and from the dining-room." (6) Two points of detail: all windows in all rooms used by patients should open from ceiling to floor, and the dining-room should be in the post of honour, facing south or south-east, flooded with light and air. (7) Finally, some recent sanatoria, with their chapels and other luxuries, have helped to bring about a dangerous swing of the pendulum towards "four corner-posts and a roof"—the latter perhaps of paper! There are signs, however, that common sense and the simple brick-and-tile age are returning.

Notes on Sanatorium Construction.

By W. CECIL HARDISTY,

F.R.I.B.A.,

Architect of the Crossley Sanatorium, Delamere Forest, Cheshire.

It is only within comparatively recent years that any serious attempt has been made to provide British sanatoria for British patients suffering from tuberculosis. Dr. A. Ransome, who has given much attention to the subject, and who speaks with the force of considerable experience, has said: "There are many places in this country where, on a dry soil and in a sunny, sheltered part on the southern slope of some upland, most of the conditions can be obtained, which are dearly bought and far sought, and often not obtained, in distant parts of the world." We have now grasped the fact that, as most of these conditions can be obtained at home, there is no necessity to transport our consumptive patients to the Alps or the German mountains, to sunny Italy, or the South of France.

Though it may not be possible to attain to the altitudes at which some of the Continental sanatoria are situate—as, for instance, one in Baden, 2,750 feet above sea-level; Albertsberg, 2,300 feet; Sülztzhayn, 1,600 feet; or Falkenstein, 1,312 feet—it is quite possible to procure sites which fulfil the chief requirements of dryness and aspect.

In the planning of the sanatorium, the question of aspect having been settled (which should, if possible, be about south-south-east), the disposition of the patients' rooms is of the first importance. In sanatoria for "paying" patients a single bedroom for each patient is a *sine qua non*; but in such as are for the poorer class of patients some few small wards (though I would not recommend more than four beds in any one ward) may be provided, as there are those amongst the patients upon whom the feeling of loneliness and isolation has a depressing effect. The whole of the rooms should, of course, have the sunniest aspect possible. Verandas are desirable, for many of the patients may be too weak to indulge in out-door exercise; but if the

bedroom windows are made sufficiently wide and open, the beds may be wheeled out on to the veranda, and the benefits of the fresh air obtained without fatigue. The bedroom doors should have "fan-lights," opening to within a few inches of the ceiling, and, in addition, an opening casement formed in the wall between the bedroom and the main corridor; the windows in the outside wall of the corridor being arranged, as far as possible, to come opposite either the door or casement adjoining, to ensure a through draught.

As Dr. A. R. Walters has remarked, with regard to English sanatoria, "national customs and prejudices have to be considered," and with this principle in view, I would recommend the provision of large and well-lighted sitting or day rooms.

The Englishman has certain fixed ideas of home life, and a house without a sitting-room will scarcely appeal to him, if only for a short period, as a reasonable substitute for the enjoyment of his home; and if the patient is to benefit by the treatment prescribed, the less he feels this isolation from home comforts the better for him, both mentally and physically.

The dining-hall should be, if possible, completely isolated from all other parts of the building by means of a covered corridor, open at the sides, and should have, in addition to large windows opening down to the floor, proper means of cross-ventilation at the ceiling level.

It is not possible in so short a space to deal with the sundry details of a well-planned sanatorium; but it must be borne in mind that light, air, and natural ventilation must rule the whole. An X-ray room, a throat-examination room, and douche room (in addition to the ordinary bathrooms), should be provided, and a well-equipped bacteriological laboratory, away from the main building, is a necessary and valuable item in the arrangement of the institution. The nursing staff and servants should be housed in the "nurses' home," also a detached building.

The Planning of Sanatoria for Consumptives.

BY H. CLAPHAM LANDER,

A.R.I.B.A.

Any serious attempt to combat tuberculosis must be upon a comprehensive and national scale. The palatial sanatoria which have been erected for the accommodation of paying patients, admirable as they are, are much too costly, both in respect of erection and maintenance, for general adoption. What is required to meet the case of the majority of patients is not the most perfect building which the architect can devise, but a building which shall embody the essentials

of a good sanatorium, and at the same time be inexpensive in construction and management. The type of sanatorium which would most nearly satisfy these conditions would probably be that of a number of comparatively small two-story chalets, to accommodate from eight to ten patients, and one independent administrative block. This latter would require no special construction, provided it was inexpensive, and would accommodate the resident medical officer, matron, and staff. The chalets or independent houses would contain day-room, dormitory, kitchen, etc., and would be provided with a sheltered veranda on the south side. Such houses as these could be very cheaply constructed of timber framing with 2-inch plaster partitions. All exposed internal woodwork would be painted with four coats, and finished with some hard-drying paint or enamel. The plaster partitions would be recoloured from time to time. The balcony and veranda would be entirely of wood. A superintendent—male or female, according to the sex of the patients—would be in charge of each house, and in direct telephonic communication with the administrative block.

The advantages of this type of sanatorium would include—(1) complete circulation of air around each house; (2) less waste of space in corridors; (3) patients would feel themselves members of a household rather than inmates of a hospital; (4) adaptability to any site; (5) facility for making additions.

In order to reduce cost of maintenance, a poultry farm and apiary might be attached to the sanatorium, as well as other light outdoor work undertaken, in which the patients could assist.

Pavilions for Consumptives.

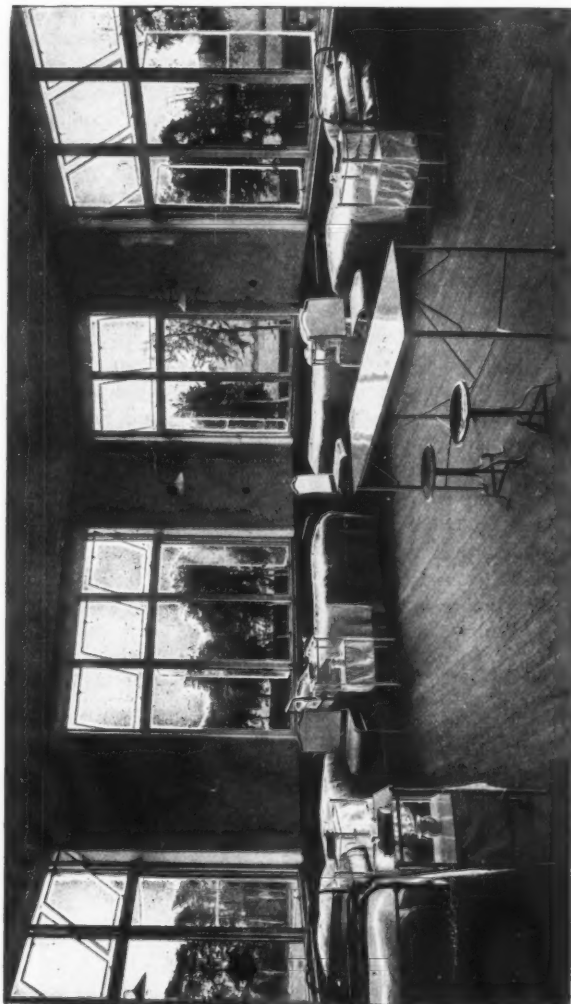
By R. W. PHILIP,

M.A., M.D., F.R.C.P.E., F.R.S.E.,

Physician to the Royal Infirmary, Edinburgh; Physician to the Royal Victoria Hospital for Consumption.

Sanatorium buildings need not—and should not—be expensive. As the result of prolonged experiment, I am satisfied that the separate one-storied pavilion is the best type of building for the purpose. The Royal Victoria Hospital for Consumption, Edinburgh, which consists of a series of such pavilions, was designed by Messrs. Sydney Mitchell and Wilson, Edinburgh, to meet my views in the matter. Each pavilion is of winged form, the obtuse retreating angle being oriented so as to face south-south-east. Each of the two wings constitutes a ward. The three outside walls of the wings consist largely of windows. Thus there is secured the maximum of air and sunlight (see Plate). The pavilion is entered from behind. From the entrance passage a short

projection northwards contains bathroom and lavatory accommodation. The intervening triangle between the wards and back passage serves



PAVILION OF THE EDINBURGH ROYAL VICTORIA HOSPITAL FOR CONSUMPTION.

as a nurses' room, where simple cooking or other special service may be arranged. Opening off the passage, also, are two dressing-rooms for patients' clothes. No luggage or extra clothing is allowed in the

wards proper. Internally the wards conform in all respects to those of a modern isolation hospital as regards smooth surfaces, absence of angles, and unnecessary furniture. There are no steam or hot water pipes in the pavilions. An open fire is provided. This is less for heating purposes than for cheerful appearance and ventilation. No attempt is made to keep the ward temperature at a fixed point. It is deliberately allowed to approximate to that of the open air. Lighting is by electricity. The windows are of French form, opening outwards with swinging fanlights above. These are kept open to the fullest both day and night. Thus the patient, when indoors, is practically in the open air. The cubic space per bed is about 1,200 feet. In view of the free access of air, that amount might be lessened. About 100 square feet of floor area are allowed per bed. As each patient commonly has a bath daily, the number of bathrooms is considerable, one bath being provided for every four patients. Adjacent pavilions are some 40 feet apart. Each pavilion contains accommodation for eight to twelve patients. The pavilions are raised on pillars some 3 feet above the ground, so that air may circulate freely beneath. The building material is of brick. Verandas and balconies have been avoided, as tending to interfere with the entrance of sunshine and air. The winged form of the building is further serviceable by affording shelter to weakly patients who may lie out in front. Hinged screens may be attached to the end of the buildings, so as to increase the shelter. In addition to the pavilion proper, open shelters are distributed in large numbers throughout the grounds. These are occupied by patients most of the day. Many are similarly utilized by night.

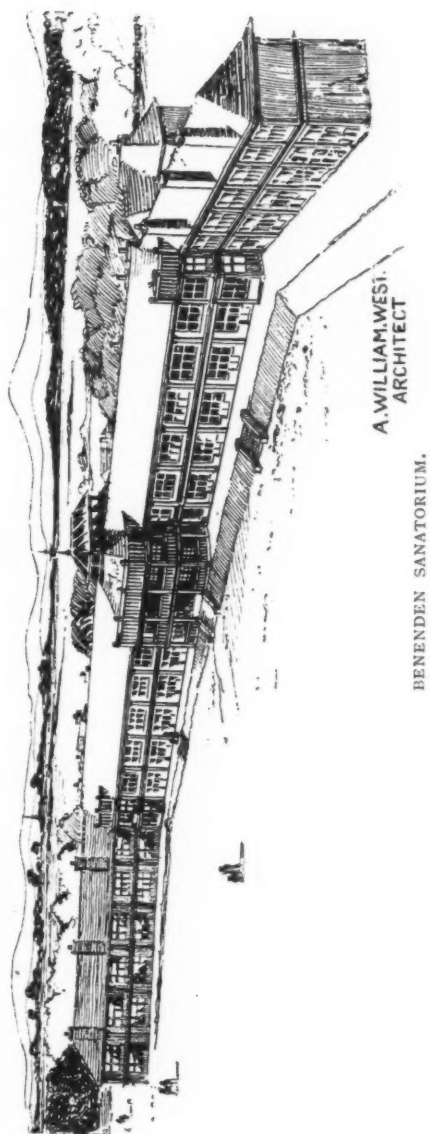
Economic Sanatoria for Consumptive Workers.

By A. WILLIAM WEST,

Architect of the Benenden Sanatorium.

The main consideration in designing a sanatorium is efficiency together with economy. The class of patient to be treated has, of course, to be taken into consideration. Better-class patients would be satisfied with nothing less than separate rooms; but among the ordinary class of hospital patients this is not necessary, and three or four may well be put together in one room. The arrangement I believe to be most suitable is as follows:

An administration block, a main block (including recreation-room) for cases which require constant medical supervision, blocks of one-storied buildings for patients able to work, laundry, mortuary, etc. The main point which an architect has to keep in view is efficiency.



A. WILLIAM WEST.
ARCHT

BENENDEN SANATORIUM.

The patients' rooms must be designed in such a way that the greatest possible amount of fresh air is supplied without draught. Economy in construction must also allow of economy in maintenance. This is very important, for it is obvious that a building may be constructed economically from a constructional point of view which may entail much work upon ward-maids and general supervision.

It has been stated in the Press at various times that separate chalets are most economical; even if this were so from the point of view of cheaper buildings—which, if such things as lavatory accommodation, etc., are taken into account, I doubt—this arrangement does not tend to keep down working expenses. This can be easily realized if it is considered that an isolated patient in a separate chalet, some distance from the kitchen, may require to have all his food carried to him, and considerations of this kind are as important as the actual economy in the building construction.

The system adopted at Benenden is to have a central block of sixty-eight beds, with a recreation-hall. Here are placed the single-bedded rooms for all cases requiring the greatest amount of medical supervision and nursing.

It is intended that the remaining 132 patients shall be placed in blocks of ten or twenty each. These patients will be drafted from the central block as they improve and require less medical attention and nursing attendance. Behind the central block comes the dining-hall and the administration department.

The method of construction adopted is an entirely new one; it is both permanent and fireproof, and, including the administration block, only costs £100 per bed. The chief features of the Benenden Sanatorium are indicated in the accompanying illustration.

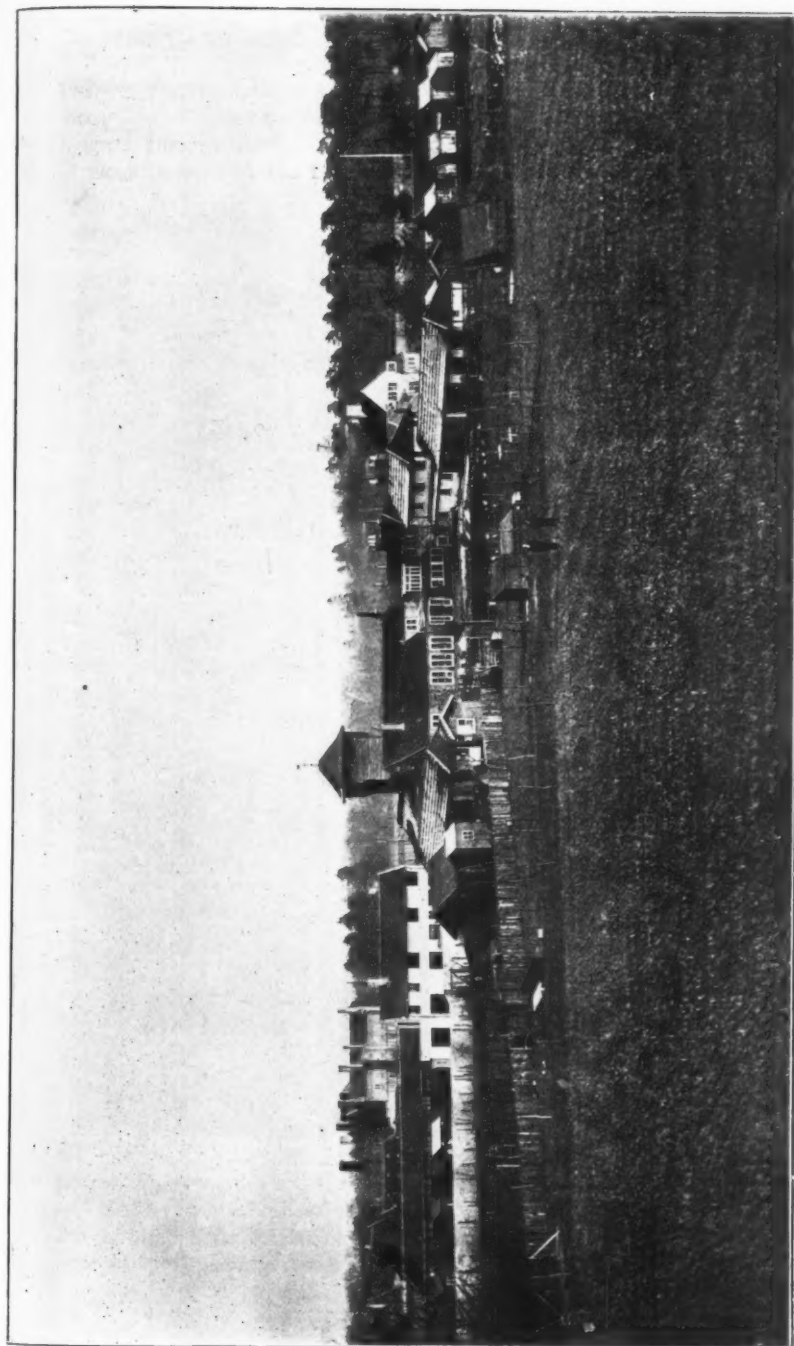
Inexpensive Sanatoria for Working-class Patients.

By W. J. FANNING,

M.R.C.S., L.R.C.P.,

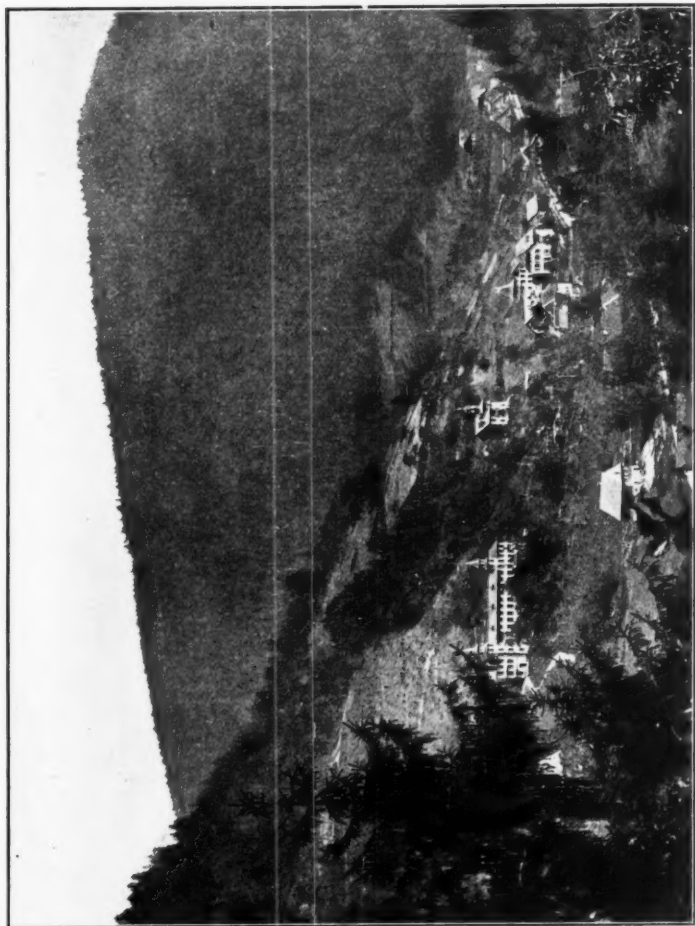
Resident Medical Officer, Kelling Sanatorium, Holt, Norfolk.

The chief principle to guide sanatorium construction for working classes should be economy without sacrifice of the objects of treatment. To this end the buildings may be of unlined wood, and roofed with the cheapest material obtainable. At Kelling the plan we have adopted has been to build a one-story pavilion, partitioned into cubicles which open on a 3-feet-wide covered way on each side by glazed doors, reaching from floor to ceiling, which are generally kept fully open and occupy the greater part of two sides of each cubicle. Instead of putting



KELLING SANATORIUM, HOLT, NORFOLK.

basins into the cubicles, a common lavatory is provided for the use of all patients who are able to get up: this saves service. The only room necessary for day use is a dining-room. Recreation-rooms are not needed, as patients who are not kept in bed can rest out of doors in



DR. WALTHER'S SANATORIUM, NORDRACH COLONY.

revolving shelters, which give protection from rain or wind coming from any quarter. No heating apparatus seems necessary for rooms which are always wide open. Sleeping accommodation built on this plan should cost from £7 10s. to £10 per bed, a dining-room for forty

patients about £3 to £4 per bed, and revolving shelters to hold two patients each about £4 per bed. We imagine we have attained to the irreducible minimum at which efficiency may be maintained.

The Advantages of a Colony Sanatorium.

By OTTO WALTHER,

M.D.,

Director of Nordrach Colony, Badischer Schwarzwald.

The advantages of a "colony sanatorium" seem to me so apparent that they really hardly need explanation. The only excuse, indeed, if you will grant such, for sanatoria more or less in the style of a palace hotel is to be found in economical circumstances; but these ought not to be considered in such an important question as tuberculosis. It is clear that for many and obvious reasons aggregation of numbers of consumptive patients ought to be avoided. On grounds of discipline, and for the sake of comfort, the maintenance of hygiene, and the conduct of rest, etc., a colony system is best. Therefore in one valley—a sanatorium should always, if possible, be placed in a valley—no more than fifty consumptives, or sixty patients at the outside, should be allowed in one institution, and these should be accommodated in houses of, say, twenty at the outside. The houses should, as far as possible, be out of sight of each other and of the kitchen buildings, but within easy reach of the medical staff. For one thing, the feeling of comfort, rest, and quietness, and the "home" atmosphere, is infinitely better in a small home than in a crowded institution. Then the patient is less apt to be disturbed by cough and the other occasional troubles of his fellows that are at times unavoidable. It is sometimes a great advantage that patients may be kept apart. Further, it does away with the general aspect of a sanatorium. I am sure every one could find many more advantages, but I never yet found occasion to think seriously about their enumeration. It has always seemed to me that one should rather ask why any other than a "colony sanatorium" was to be recommended.

A Sanatorium Village for Consumptives.

By EDWARD L. TRUDEAU,

M.D.,

President and Director of the Adirondack Cottage Sanatorium, Saranac Lake, New York State, U.S.A.

One of the principal reasons which led me, twenty-three years ago, to adopt the cottage plan was that at that time the lack of faith and interest in any attempt to relieve or cure pulmonary tuberculosis made

it necessary that the institution should be built piecemeal and gradually developed, as only such small sums as were required to build inexpensive little cottages as memorials could be obtained. Our sanatorium cottages were planned for from two to eight patients, but most of them accommodate only four. Each patient has his own room, opening on a sleeping-porch, and there is a common sitting-room and a bathroom in each cottage. The cottage plan has many advantages and some disadvantages. Wards and pavilions, for many reasons, are much more practical in dealing with the lower and less sensitive class of patients; but for the middle classes, for people of refinement, who object to being put in wards, and even pavilions, and require a certain amount of privacy, the cottage plan is the ideal one. It is, to my mind, the best method of avoiding the evils and depressing effects of aggregation and guarding against infection. The dust of these buildings at the sanatorium has been shown experimentally to be free from infective power when injected into guinea-pigs, though only ordinary cleanliness, air-dilution and sunlight, with the usual precautions about the patients' expectoration, had been relied upon to guard against infection. With an infirmary building devoted to the more acute cases, the element of illness is practically eliminated from the colony, and those who are comparatively well are entirely free from the depressing influence of watching the sick. The cottage system affords ample veranda space for privacy in taking the open-air treatment and sleeping out, a privacy which cannot be obtained on a crowded porch. The life of a cottage sanatorium, with its workshop, its recreation pavilion, its church, its post-office and library, where all patients are not obliged to be constantly in contact with each other, and where they all meet only at meals, is more like the life of a village than that of an institution, and has an excellent effect on the patients' spirits—so much so that the hardest rule we have to enforce is that which limits the length of their stay at the sanatorium. The comparative absence of personal friction, so common in patients who are forced to live constantly in close contact with each other in wards, and even pavilions, is another appreciable advantage of the cottage plan. It has been claimed that the cottage system does not allow of sufficiently strict supervision of the patients, but in an institution devoted principally to the treatment of incipient cases such strict supervision is hardly necessary, and those who need it and are more acutely ill are constantly under the eye of the nurse and the doctor in a special building. A real objection to the cottage plan, specially in a rigorous climate, lies in the greater cost of building and maintenance.

Cottage Sanatoria.

By ESTHER CARLING,

M.D.,

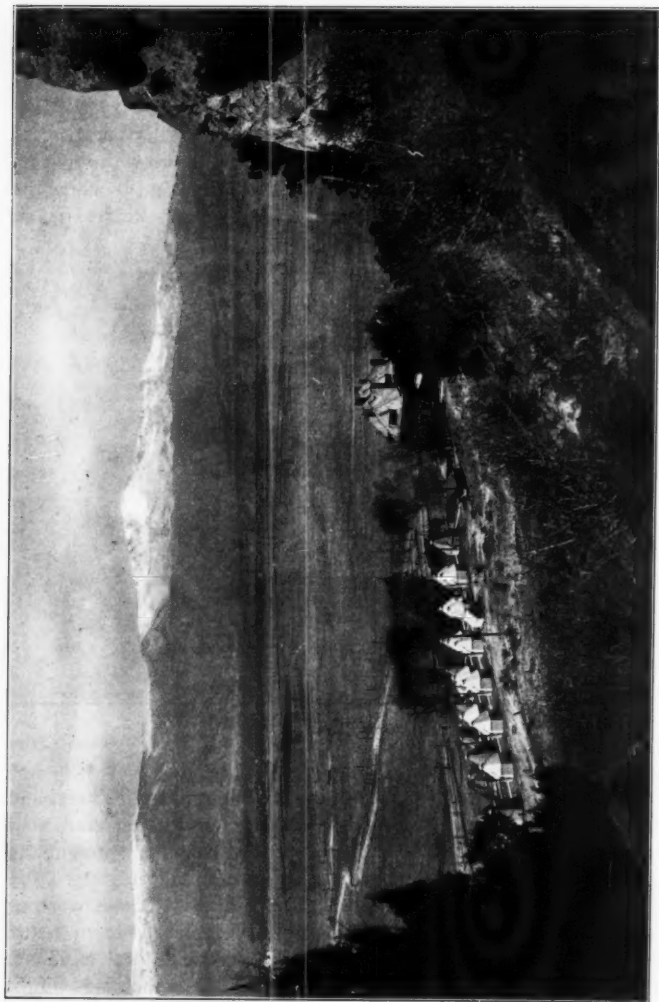
Medical Superintendent of the Maitland Cottage Sanatorium.

The groupings of small numbers of patients in lightly-constructed cottages has an advantage, not only in initial cost, but also in upkeep. Institution expenses seem to multiply in an indirect ratio when the numbering is by tens rather than units. A common kitchen is an



A COTTAGE AT THE MAITLAND SANATORIUM.

economy, but small groups of men, women, children, acute cases, and working convalescents, are more easily managed and better graduated than an indiscriminate herd. In future, sanatoria should represent the stages of treatment in their construction as in their daily régime. We have left behind the day of the mere rest cure, and we expect work as the final stage of treatment. This will often involve different hours of meals and kinds of meals, and hence separate cottages, such as shown in the accompanying figure, are more practical. Compressed "fibrocement" has proved a very useful material for sanatorium cottages, certainly superior to wood.



NORDRACH RANCH SANATORIUM, COLORADO SPRINGS, U.S.A.

The Tent Colony System.

By JOHN E. WHITE,

M.D.,

Medical Director of the Nordrach Ranch Sanatorium, Colorado Springs.

The tent colony offers many practical advantages, which are of great assistance in the crusade against tuberculosis. It affords means whereby we may provide for the largest number of tuberculous people in the way which gains the best results at the least possible cost for equipment. In the American sanatoria, which consist of either wood, brick, or stone buildings, the cost per head ranges from \$1,000 to \$4,000, which I contend is too much if we are ever to cope adequately with the great number of consumptive sufferers needing institutional treatment. Tents can be so constructed as to be adapted to any climate at a cost per head of from \$200 to \$250. In addition to the tent colony, a central building, physician's office, servants' quarters, and land, are required. We know from experience that the total cost for these need not exceed \$25,000, making the sum total for a colony accommodating one hundred patients \$50,000—a sum approximately one-half the minimum cost of any other plan of construction.

Tent-House Sanatoria.

By P. M. CARRINGTON,

M.D.,

Surgeon, Public Health and Marine-Hospital Service, U.S.A.,

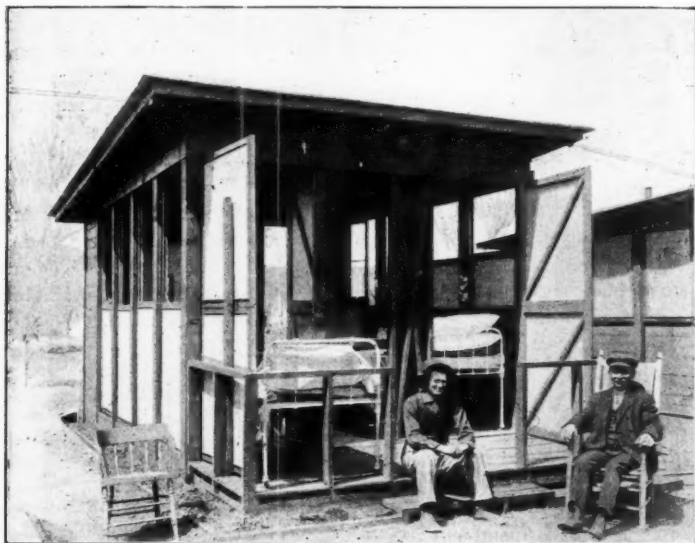
AND

J. ROSS THOMAS,

Acting Architect, Public Health and Marine-Hospital Service, U.S.A.

A brief description of our Tent-House Sanatorium at Fort Stanton, New Mexico, conducted under the Public Health and Marine-Hospital Service of the States, will best exemplify the special features of this particular system of sanatoria construction. In our tent-house plan, all administrative parts of the sanatorium, such as executive building, kitchen and dining-room, power-house, etc., are concentrated in the northern part of the enclosure. All patients are quartered in tent-houses, placed 12 feet apart, in groups of ten, each group having its own nurse and toilet-house. The most advanced cases are placed near the executive building. Each tent-house is intended for two patients, and is 14 feet by 14 feet in plan. The front, or southern, wall contains three canvas-covered Dutch doors, two of which are wide enough to allow the passage of a bed. The east and west sides contain canvas sashes that slide to the floor, completely opening the upper halves of these walls. On the rear, or north side, is a clothes closet and a canvas

Dutch door. There is an automatic ventilator in the roof, and ventilating apertures in the floor and near the ceiling. There are open porches on the northern and southern sides. The main structural points are shown in the accompanying figure. The advantages of the tent-house plan are: (1) Each house can be easily and completely opened to air and sun. (2) When closed it is automatically and thoroughly ventilated. (3) Patients can have sunshine or shadow as required at any hour of the day.



A TENT-HOUSE AT FORT STANTON SANATORIUM, NEW MEXICO, U.S.A.

(4) Patients can be placed with a congenial companion, but are isolated from unpleasant associates and other disagreeable features of ward treatment. (5) Patients take interest in the care and adornment of their separate quarters. (6) Convenience is provided in the grouping of patients. (7) Flexibility and ease of rearrangement. (8) Freedom from fire risk. (9) Comparative low cost.

Sanatoria for Children.

By G. E. HOLMAN.

In planning a sanatorium for tuberculous children, the accepted principles, rules, and regulations which guide us in designing sanatoria and hospitals for adults must be applied in so far as they are required for the general circumstances of the case; but there are many special

points and particular features which must be borne in mind when dealing with establishments for consumptive and other tuberculous children. It should be a fundamental principle and rule, from which there should be no exception, that tuberculous children must never be allowed in the same building with consumptive adults.

To meet the requirements of the developing child, special features must be provided. It must be remembered that a consumptive or tuberculously disposed child is not to be viewed merely as a temporary patient, but as a sick or disabled resident, who—it may be for several years, and certainly through a considerable portion of the most important developmental period of its life—will require conditions for the maintenance of home influence in the moulding of character, and school-life, for educational training and preparation for future service.

A children's sanatorium should be provided with a certain number of single rooms for cases seriously ill or requiring special treatment. For others small wards may be allowed, containing two, four, six, or even eight beds; but large dormitories, where personal and home influence must be largely wanting, are to be condemned. By such arrangements the teacher's influence is made constant, and medical treatment can be readily adapted to meet special circumstances as they may arise.

As regards site, position, and the like, general principles of sanatoria construction hold good. Anything approaching the barrack system must be strictly avoided. One-story buildings are certainly preferable, but in this country economic reasons usually necessitate a building of two stories. Balconies allowing of continuous open-air treatment should be provided, not only on the south side, but also on the north, as in south-west gales and with a blazing summer's sun the northern aspect will be found to be particularly beneficial for children. All balconies should be of ample width and continuous, to take a full-sized bed and allow of proper supervision. The generally approved corridor running along the north side should be retained, but in the case of children it is essential that it should be kept to a full width, so providing what may be practically an open-air shelter for cripple and bedfast cases when occasion requires, and not specially arranged to serve as a recreation-hall and playroom for the children in winter evenings and during inclement weather. The introduction of large bays in these corridors will add to their architectural effectiveness, cheerfulness, and general usefulness. Means for drying the rugs, bedding, etc., which during certain seasons of the year often become saturated with moisture from dew and mist, should be provided in proximity to the wards, and so placed as to be directly under the supervision of the sister in charge.

Windows should be kept sufficiently low to enable a child when lying in bed a free outlook over the country. Windows should always

be carried up to the full height of every room, so ensuring complete extraction of foul air. Ventilation should be by open windows and cross-currents. Means for heating are best provided by open fire-places and a low-pressure hot-water circulating system. The walls of corridors and wards should be formed of washable material, with all angles rounded, and an absence of all ledges and mouldings which would receive and hold dust and dirt.

The floors require special consideration in a sanatorium for children, as in their play they are brought into closer contact with the floor than are adults; and hence it becomes of the highest importance to have a floor that can be easily cleansed, and with an absence of joints, and possessing no tendency to collect dust. A jointless floor, fairly soft, non-absorptive, which does not break up into dust, and is capable of taking a polish, offers the ideal. Floors should be kept at one level, and all steps avoided.

Doors should be sufficiently wide to allow for easy transit of bed-fast cases on to the balcony or terrace.

In a sanatorium for children, an open-air schoolroom, separate from the individual houses, should be arranged for. By a strictly ordered hygienic arrangement of both home and school life in a well-equipped and rationally supervised sanatorium, there will have been provided the best conditions conducive to the fullest benefit of all tuberculous children, and those in any way predisposed to consumption or other forms of tuberculosis.

The Flooring of Sanatoria.

By ROWLAND PLUMBE,

F.R.I.B.A.,

Consulting Architect to the London Hospital.

The attention of experts interested in hospitals and sanatoria has for some considerable time been directed to the construction of floors, with a view of deciding on the respective merits of the various methods adopted. The old method of forming double-framed floors, consisting of main timber girders, fixed every 12 or 14 feet apart, into which were framed binders, on which were notched floor and ceiling joists, leaving a considerable space between the floor and ceiling, is now practically discarded. Later on the same form of construction was used, substituting rolled iron joists for the timber girders. This form of construction has now been replaced by one or other of the many floors formed of incombustible materials, the most common being that consisting of steel girders rolled, or built up and riveted, which are fixed to support rolled joists laid crossways at short distances, the spaces between being filled in with concrete compound of Portland cement

and either coke breeze or stone ballast. Brick floors set in cement, and strengthened with iron tension bars, are also used, especially on the Continent. Different forms of earthenware cylinders and various forms of reinforced concrete are all now largely used, the great desideratum being to construct a floor which shall be fire-resisting, and which will allow of a level ceiling underneath, without the projection of girders below the general ceiling line.

The old practice of covering the surface of ward floors with deal or hard-wood flooring boards or fillets bedded in the concrete, or nailed direct to the concrete itself, and laid close on same without any air-space, is still followed, and sometimes a paving of wood-blocks is still used; but these methods are objectionable on account of the shrinkage which almost invariably takes place, even though the boards or blocks are laid in the narrowest widths and with the most approved joints practicable, thus leaving spaces, in which dust and other harmful matter accumulate. Sometimes hard tiles laid solid on the concrete floors in cement, and the joints grouted in same, are used, more particularly on the Continent.

Notwithstanding the advantages possessed by wood floors on account of their comparative softness and elasticity and warmth in using, hospital experts have long felt that a jointless floor should be adopted for hospital use, and many forms of this kind of construction could be enumerated—namely, mosaic floors of glass, pottery, or marble laid in a plastic state and polished, such as Terrazzo, cement, or granolithic. Floors formed of indiarubber tiles are in the market, but are not largely used on account of cost.

Of late years floors formed of a composition of sawdust, prepared wood, asbestos fibre, or other material, and bound together and set with a cementing material, and called by various names, such as Papyrolith, Durolith, Eubeolith, Ebnerite, Doloment, and many other inventions of the kind, all more or less of a secret nature, have been widely advertised and used. These latter, if they could be absolutely guaranteed from cracking and shrinking, or swelling and disintegrating, would have many valuable qualities for hospital use, being warmer, softer, quieter, and more sound-proof than tiles or mosaic. These floors can be laid in patterns or designs, and take a good polish.

A very simple form of floor finish, and one that is used in the largest hospitals, is formed of "all-through pattern" linoleum, stuck down with Dextrine or other cementing material on to an ordinary cement-floated floor, and slightly polished with Ronuk or other similar material. This is probably the most economical, comfortable, and noiseless floor in use, and one which is cleaned with the least labour.

In forming the rounded angle between the floor and the wall, which can be very effectively made of the Terrazzo before referred to, a small

rebate should be formed, into which the linoleum fits, thus making a flush and tight joint. Care should be taken to ascertain that the concrete is properly dry; and before the linoleum is fixed permanently it is as well to lay it for a time without cementing it to the new floor surface.

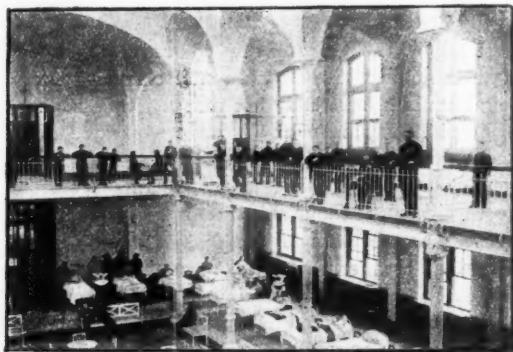
French and German Sanatoria.

By F. R. WALTERS,

M.D., M.R.C.P.,

Physician to the Crooksbury Sanatorium, late Physician to the Mount Vernon Hospital for Consumption.

France.—Although the proportion of sanatorium beds to population in France is still low, she sets us a remarkable example in at least two respects. A wonderful provision has been made for tuberculous children, both as regards seaside homes for so-called surgical cases, and



VILLIERS-SUR-MARNE HOSPITAL, PAVILLON DES ENFANTS DE FRANCE.

inland sanatoria for the phthisical. Especially noteworthy are the two Hospitals of Ormesson and Villiers-sur-Marne, which between them provide 350 beds. This organization was started by voluntary contributions without State aid—an unusual thing in France. The boys are kept until they are well, many being then passed on to one of several Agricultural Colleges. There is a similar organization for girls (*Œuvre de Villepinte*), besides a number of smaller or less specialized institutions. Another remarkable feature in France is the provision of Tuberculosis Dispensaries, of which there are fourteen in Paris, and rather more in the provincial towns. Most of the French sanatoria for adults are large permanent buildings of several stories, such as the

Agincourt, Hauteville, and Bligny Sanatoria for the poor; and the Gorbio, Sanatorium des Pins, and Aubrac Sanatoria for full-priced patients. Some of the oldest, however, are lodged in châteaux not specially built for the purpose.

Germany.—There is a very abundant provision of sanatorium beds in Germany—over 8,000. Many of the sanatoria (over 40 per cent.) have been erected by insurance companies, trade unions, and railway companies. This is the outcome of the law of compulsory insurance against sickness. Another noticeable feature is the practical absence of gratuitous treatment. Most of the German sanatoria are large institutions with from 90 to 150 beds or more. There are about 45 per cent. of this size (some even numbering over 200 or over 300 beds), as against 27 per cent. with from 40 to 70 beds. As a rule, the chief part of the sanatorium is concentrated in one block of three to five stories, with a single row of bedrooms or wards, a deep and lofty veranda in front of the basement or ground-floor, perhaps others in front of the bedrooms, and often also lateral *liegehallen*. The kitchen department is usually central in the basement, with the dining-saloon over it, placed either in the main block or in a northerly pavilion. Lighting is usually by electricity; heating by steam-pipes. Ventilation in winter is apt to be timid, and overheating of rooms not infrequent. Meals are many and large; less exercise being prescribed than in most British sanatoria. Hydrotherapy is a marked figure. Space will only permit me to mention the uniform system of statistics in vogue, and the day-sanatoria in the outskirts of Berlin.

ORIGINAL PAPERS.

SOME POINTS IN THE DIAGNOSIS OF
TUBERCULOSIS IN INFANCY AND CHILDHOOD.

By L. EMMETT HOLT,

M.D.,

Professor of Diseases of Children in the College of Physicians and Surgeons,
Columbia University, New York.**1. The Frequency and Mode of Infection in Tuberculosis.**

THE frequency of pulmonary tuberculosis in infancy has not yet been fully appreciated, because we have not been accustomed to look for it with sufficient thoroughness. More careful application of our means of diagnosis has made possible the recognition of tuberculosis in very many cases when otherwise it is likely to be overlooked, and has emphasized the fact that pulmonary tuberculosis is really a very common disease in infants. The means to which I refer particularly are—(1) the systematic search for tubercle bacilli in the sputum of children who are known to have been exposed to infection, and (2) the use of the tuberculin test. A consideration of the latter will be reserved for a subsequent report.

During the nineteen months ending May 1, 1907, sixty-seven cases of pulmonary tuberculosis have been treated in our New York Babies' Hospital, sixty-two of these being children under two years and fifteen under six months of age. The diagnosis rested upon finding bacilli in the sputum in fifty-four of the living cases; upon post-mortem examination in ten; and of the remaining three, one had tuberculous meningitis (tubercle bacilli were found in the fluid drawn by lumbar puncture), one reacted to tuberculin, and the third presented typical clinical symptoms of pulmonary tuberculosis. In only half of these cases was any consolidation of the lungs noted at the time the diagnosis was made, and in nine cases there were no pulmonary signs whatever, the infants having been admitted for other conditions than tuberculosis.

A demonstration of the presence of the tubercle bacillus in the sputum in over 80 per cent. of these cases when, according to the physical signs, the disease was not far advanced, brings up the question of the different means employed in obtaining the sputum in infants. This has generally been assumed to be, if not impossible, at least a difficult and uncertain procedure. Infants do not expectorate, but

cough up the bronchial secretion into the pharynx and swallow it. Sputum must, therefore, be obtained from the pharynx or œsophagus. To seek for bacilli in the vomitus, as has been recommended, is almost a hopeless task. For a time we tried passing the stomach-tube, and staining the œsophageal mucus which adhered to the tube on withdrawal. This was satisfactory in some cases, but in many others it was not, as the mucus from the œsophagus was apparently rubbed off as the tube was withdrawn through the mouth. The method at present followed, and the one which has given most satisfactory results, is to excite a cough by irritating the pharynx, and then to catch the sputum brought up into view upon a bit of gauze or muslin. The cough may be excited by a spoon or tongue-depressor, or better still by irritation of the pharynx with a small bit of muslin held in the jaws of an artery-clamp. Secretion is easily secured when it is brought into view by the cough. Muslin is better than gauze or absorbent cotton. Swabs prepared as suggested are placed by the child's bedside, and when the nurse notices a severe paroxysm of coughing, the child is picked up and, if possible, the sputum obtained. Inversion during a paroxysm of coughing sometimes causes the infant to discharge a considerable mass of mucus into a sputum-cup. By the procedure mentioned it has not been found more difficult to obtain good sputum for examination than in corresponding stages of the disease in adults.

The source of infection in many of the hospital patients forming the basis of this paper was, of course, impossible to trace. It is, however, of interest to note that a definite history of tuberculosis in one or other parent existed in twenty-one cases, and that in six others there was positive evidence of the disease in some other person in the household; and in two others there was a somewhat doubtful history of tuberculosis. Direct contagion would, therefore, seem to be the explanation of a very large proportion of the cases. In our series the possibility of infection at home was known to have existed in at least 40 per cent. of the children.

For the past year it has been the custom at our hospital to inquire carefully into the family history of all children admitted, and if there is any evidence, or even a strong suspicion, of tuberculosis in either parent, a careful and repeated search is made for tubercle bacilli in the sputum of the infant admitted. In some of the children found to have tuberculous sputum there has been evidence of a slight amount of bronchitis; others have presented no evidence whatever of any local pulmonary lesion. The results of our routine examinations have certainly been surprising. If one or other parent was affected with tuberculosis, it has been very exceptional not to find bacilli present in the sputum of the children; in a few of the cases where these were not found a positive reaction to tuberculin was obtained. This emphasizes

the fact that the infant is exposed to house infection more intimately than any other member of the household. The older children are away at school or out of doors at play, while the infant is very apt to be in charge of the invalid who is ill at home, and hence its opportunities for infection are more greatly increased.

The relative infrequency and insignificance of intestinal lesions found in the tuberculosis of infants seem rather surprising when we consider for how long a period and in what numbers tubercle bacilli are coughed up or are swallowed. It would appear that the intestinal tract is not very vulnerable to tuberculosis at this period of life. The foregoing observations tend strongly to confirm me in the opinion that it is direct contagion which is responsible for most of the tuberculosis in infants, rather than infection through milk or other foods.

2. A Study of the Cerebro-spinal Fluid in Tuberculous Meningitis.

The value of lumbar puncture as an aid to accurate diagnosis is now generally appreciated. It gives certainty in many irregular cases, where formerly tuberculous meningitis could only be suspected. Considerable difference of opinion has been at times expressed as to the frequency with which bacilli may be found in the fluid drawn by lumbar puncture. The results obtained by inoculating guinea-pigs with the fluid indicated that the bacilli were nearly always present, but the general opinion has prevailed that in a very large number of cases they could not be discovered with a microscope.

During the past fourteen months there have been treated in the New York Babies' Hospital forty-two cases of tuberculous meningitis, in every one of which tubercle bacilli have been found in the cerebro-spinal fluid. This is, I think, a larger series of consecutive cases than has previously been reported. It may therefore be assumed that tubercle bacilli are practically always present, and that they can be found, provided a sufficient degree of care is exercised in searching for them. Some important points in technique have been developed in the course of this study which are of considerable assistance in finding the tubercle bacilli. In withdrawing the fluid it has been customary to remove all that flowed readily and receive it in several tubes, since the bacilli were much more likely to be found in the last portion drawn than in the first, probably because they are present in larger numbers in the brain and come down with the fluid last removed. The number of bacilli present is not usually great, and careful search is necessary, but not more so than is required in hunting for tubercle bacilli in sputum. The average time consumed in this series of cases was about one hour; in two cases a search of five or six hours was necessary. In only three of the entire number were tubercle bacilli

present in such numbers that practically every microscopical field revealed them. The time of puncture is of some importance. The bacilli were usually more numerous in late punctures than in those made in the early stages of the disease, although they were sometimes found with the very earliest symptoms. In this series they were found by the first puncture in two cases.

The technique of search followed at the Babies' Hospital is as follows: The fluid is allowed to stand in the test-tube for twelve hours. If a film forms by the coagulation of fibrin in the fluid, this is fished out with a platinum loop and stained. Such film formation occurred in about half the cases, and in it the bacilli were pretty certain to be entangled. If no film formed, the sides of the tubes were scraped with the platinum loop. If the bacilli were not found in this way, the fluid was centrifuged. The chance of success after centrifuging is greatly increased by adding to the fluid one or two drops of blood. As a matter of routine it has been found desirable to draw a single drop of blood with the very last fluid coming from the spinal canal. This is easily done by producing a slight movement with the needle before withdrawing it. The additional fibrin also aids the film formation, and thus adds greatly to the facility of finding the bacilli. Another procedure sometimes successful is to superimpose drops upon a slide. The first drop is placed and allowed to dry on, afterwards a second one in the same spot, then a third, a fourth, and so on, and occasionally bacilli are found when their number is very small. Success depends largely upon the patience and cleverness of the physician. The cells found in the cerebro-spinal fluid in tuberculous meningitis are generally few in number, and these are usually mononuclear cells. Only twice in the forty-two cases were cells present in sufficient numbers to give a marked turbidity to the fluid. This is in striking contrast to the fluid seen in cases of cerebro-spinal meningitis and in those of pneumococcus meningitis.

It has been believed by many that the absence of glucose is of importance in distinguishing the fluid from cases of tuberculous meningitis from the normal cerebro-spinal fluid. Fehling's test was applied in thirty-two of our cases. The presence of sugar was demonstrated in fifteen, but was absent in seventeen cases. No conclusion could therefore be drawn from the reaction.

It has been our custom to seek for bacilli in the sputum in every case of tuberculous meningitis, no matter whether pulmonary symptoms existed or not. They were found in twenty-two of the forty-two cases, although in only five of these was there any consolidation of the lung, and in nine there were no signs whatever in the chest. In the remainder there usually was some general bronchitis, which in most of the cases appeared late, and was more probably not of tuberculous origin.

To Dr. Josephine Hemenway, House Physician of the New York Babies' Hospital, by whom most of the laboratory work reported in this paper has been done, I wish to express my great obligation.

THE CONDITIONS OF INFECTION BY TUBERCLE.

By ARTHUR RANSOME,

M.D., F.R.C.P., F.R.S.,

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SINCE I last wrote upon the well-worn theme of the "Conditions of Infection by Tubercle," the second Interim Report of the Royal Commission on Tuberculosis has been published; but this Report only deals with the direct infection of man and animals by inoculation and ingestion of tuberculous material: so far as I can gather, it says nothing of the conditions of ordinary external infection by contact with tuberculous individuals or their products. It is surely of great practical importance, however, that these conditions should at least be carefully considered. The welfare of many thousands of the population depends upon them, and so also does the selection of the best practicable means of meeting them.

Fortunately, there is now no need to elaborate proofs that in ordinary life infection from tubercle depends mainly upon three conditions: (1) The presence of virulent forms of the tubercle bacillus; (2) the receptivity of susceptible bodies; and (3) an environment which can preserve the life and virulence of the specific organism. For the most part, these three conditions are well recognized, yet it is not unnecessary again to insist upon them all, since, in regard to the measures to be adopted in fighting the disease, there seems to be a tendency to pay chief attention to the first of them and to ignore the others.

To anyone who has watched the trend of events respecting the safeguarding of the public health, it is impossible not to observe that in all our great towns direct restrictive measures against pulmonary tuberculosis are in the ascendant. Quite recently the Edinburgh Municipal Council have adopted most stringent enactments in this direction, and even such eminent medical officers of health as those of Brighton and Manchester, who have done splendid work in the way of general sanitary reform, have latterly laid chief emphasis on the need of segregating consumptives.

It is apparently vain to point to the enormous reductions which

have already been made in the English and Scottish phthisis-rate in the last sixty-five years—reductions that must have been almost entirely due to general sanitation, but which nowadays is seldom mentioned in this regard. On the contrary, men's eyes are turned away from the subjects of ventilation, drainage, and better housing of the poor, and are intent mainly on notification of phthisis, disinfection, hospital and sanatorium accommodation, and colonies for consumptives. There is, in fact, now a sort of unreasoning scare of tuberculous infection running through the whole community, and the general public is joining in an outcry against permitting any poor consumptive to remain in society. The disastrous results of this unnecessary alarm are well known to most members of our profession. Persons with almost any chest disease find it difficult to obtain places as domestic servants. The close ties of family affection are often not strong enough to induce the relatives of consumptives to undertake what is considered to be the dangerous duty of nursing them. Hotels and boarding-houses are closed to them at home and abroad, and people shrink from meeting them in society. This attitude has, indeed, already been spoken of by indignant doctors as "phthisiophobia."

There is undoubtedly some excuse for this attitude on the part of contagionists. Tuberculosis is admittedly a communicable disease. Most, if not all, the thousands of cases which arise year after year in our midst have originated from infection by man or animals. The discovery, by Cornet and others, of virulent tuberculous dust in rooms previously occupied by consumptives has also shown in what manner, for the most part, the disease is conveyed from man to man. The danger of infection by tubercle is therefore a real one, and must be taken seriously into account; but the conditions under which it is likely to occur should also be duly considered, and if they are, I feel sure that the scare will cease.

In spite of its communicability, it is tolerably certain that, unless actually inoculated into the body, tuberculosis rarely infects the human body without the two conditions which have been mentioned being also present—that is, there must be a susceptible body to receive it, and the surroundings such as to enable it to preserve its virulence. It may, indeed, be affirmed with confidence that, unless the tuberculous virus be present in overwhelming quantities, infection from it will not take place when the other two conditions are absent. In other words, infection by tubercle is conditional.

In regard to the prevention of tuberculous disease, this conclusion is of great importance. It means that, so far as the public health is concerned, if one of the factors determining infection be absent, the others are comparatively harmless; and, consequently, that several methods of fighting the disease are open to us: (1) We may clear away

the bacillus from our midst, especially in the form of tuberculous dust ; (2) we may so improve the general health of the community that the power of resistance of even susceptible people may be increased to an effectual degree ; and (3) we may so reform the "surroundings" of these people that the bacillus will be unable to retain its virulence long enough to form infective tuberculous dust.

I do not hesitate to say that each and all of these methods should be attempted, and we may take courage with regard to the ultimate total abolition of the disease from the reflection that none of the suggestions are impracticable.

First, with regard to the bacillus itself: notwithstanding its power of resistance to ordinary disinfectants, it is, as Dr. Moxon called it, but "a tender plant." As Professor Sheridan Delépine and I have shown, it is speedily destroyed by short exposures to fresh air and sunshine, and it cannot exist long in an otherwise healthy locality. It may also be met by a judicious use of the several direct measures against infection to which I have already called attention. Notification, disinfection, sanatorium treatment, and the like—all these could be used in such a fashion as not to create a scare. Explanations could easily be given as to the conditions under which alone there is danger of infection, and, fortunately, in this regard our hands are now greatly strengthened by Professor Robert Koch's recent statement of the case in his Nobel Lecture. Thus he says: "Among patients with open tuberculosis distinctions are to be made as regards the degree of dangerousness to be ascribed to them. It is matter of common observation that such patients live for years in their families without infecting anyone. In hospitals for pulmonary phthisis it is, in certain circumstances, possible that no cases of infection occur among the attendants, or, at any rate, so few that in former times it was thought necessary to regard this as proof of the non-contagiousness of tuberculosis." He sums up by saying: "Patients with closed tuberculosis are to be regarded as quite harmless; even those who suffer from open tuberculosis are harmless so long as the tubercle bacilli expelled by them are prevented by cleanliness, airing, etc., from infecting. The patient becomes dangerous only when he is personally uncleanly, or becomes so helpless in consequence of the far-advanced disease that he can no longer see to the suitable removal of the sputa."

The second condition—namely, the susceptibility of the individual—might perhaps be more difficult to deal with, but here again there is no need to despair. By far the largest proportion of the persons who succumb to pulmonary phthisis have acquired their receptivity of the disease, and it is not a little comforting to observe that most of the agencies which prepare the soil for the seed are entirely avoidable. With purer air in all our workshops, absence of

microbic dusts, better food and clothing, and less drinking (and all these conditions are attainable), we should undoubtedly have fewer forcing-beds for the cultivation of the disease, and consequently a lowered rate of mortality in phthisis. Assuredly much more could be done to ventilate workshops, to diminish the harm now accruing from trade dust and from irritating fumes; all places of public assembly could be brought under control, could be properly cleansed and ventilated, and many weakening diseases could be avoided. Thus also many forms of lung disease, which are so often the precursors of phthisis, might be prevented.

Both for the prevention of infection and for the improvement of the general health of our populations, therefore, we are perforce brought face to face with our third condition of infection. Here we are on sure ground. We know that healthy surroundings will speedily destroy the virulence of the bacillus, even in sputum, so completely that there will be little chance of any active tuberculous dust remaining to float in the air and to infect even susceptible or injured lungs.

We know, moreover, that such surroundings will improve the health of the inhabitants, and that they will increase the resisting power of their bodies to infection. In fact, the third condition of infection being absent, the other two are almost powerless for evil. In opposition to this view, it may indeed be contended that this third condition of infection cannot really be done away—that we cannot bring about in our large towns such a degree of sanitation that universal destruction of virulent tuberculous matter shall be the result.

I cannot, however, grant this point. It will doubtless be difficult, but I do not believe it to be impossible, so to improve dwellings, drainage, and ventilation as to eradicate tuberculous infective areas, and so to build our towns that the bacillus will lose its congenial haunts, and at last be starved into impotence.

There is, fortunately, no need of counsels of perfection in these reforms. Great results can be, and have been, achieved by comparatively feeble means. Our municipal authorities have in the past been sadly hampered by the ineffectual nature of many of the Acts under which they have had to work. Amending Acts have had to be passed from time to time, and it is only within the last few years that they have received fairly adequate powers; much, therefore, remains to be accomplished. The measures which they have put in motion necessarily proceed slowly, and large tracts of insanitary property still exist. The improvements, moreover, which have already been effected have not yet had time to produce the results which may fairly be expected from them. Yet, to take only one instance, what a surprising diminution has taken place, mainly owing to these measures, in the death-rate of females from consumption. Just as leprosy in the Middle

Ages gave way before most imperfect efforts at sanitation, so now consumption seems to be driven back by the mere menace of cleaner modes of living.

Even the male populations have benefited to some extent by these improvements, and this in spite of their filthy spitting habits, their resort to infected public-houses and to other dusty and dirty places of public amusement, and in spite of the still badly-ventilated and dusty condition of many of their work-places. What, then, may we not hope for when more radical reforms are introduced, when all kinds of factories and workshops are properly ventilated, and when all places of public assembly are brought under proper control?

Looking back upon what has already been accomplished by the limited efforts at reform in the past sixty years, and forward to still more enlightened measures in the future, I feel confident that the steady decline in the disease which is now going on will be greatly quickened, and that the abolition of the disease will take place in the next half-century.

INSTITUTIONS FOR THE TUBERCULOUS.

CLAVADEL SANATORIUM, DAVOS.



CLAVADEL SANATORIUM. DAVOS-PLATZ IN THE BACKGROUND.

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ERNST FREY, M.D.

NEWCASTLE-UPON-TYNE AND NORTHUMBERLAND SANATORIUM, BARRASFORD, NORTH TYNE.

ON May 11, 1907, the Newcastle-upon-Tyne and Northumberland Branch of the National Association for the prevention of Consumption opened their Sanatorium at Barrasford. The opening ceremony was performed by the Right Hon. Lord Armstrong, President of the Branch. The Sanatorium is situated in the North Tyne District, about thirty miles from Newcastle-upon-Tyne. The site has an elevation of 650 feet, and covers an area of over 60 acres, 10 of which are occupied by a plantation which affords shelter from the north and east. The arrangement of the main building will be evident from the accompanying plan. Each patient is provided with a separate room, 14 feet by 12 feet, and 10 feet high. The west wing faces south-south-east, the east wing south-south-west, and the open-air galleries due south. The out-buildings include a caretaker's cottage, a stable and coachhouse, an isolation hospital, and a block containing the heating and electrical plant, disinfecting-rooms, laundry and mortuary. The buildings are constructed of corrugated iron and wood; they are lighted by electricity and heated by low-pressure steam. The sewage disposal works are constructed on the septic tank and filtration process. A plentiful supply of good water has been obtained by boring. The cost of the Sanatorium, including everything, from the purchase of the site to the furnishing of the buildings, amounts to about £22,700. The administrative block is arranged for serving one hundred patients, and the fifty additional bedrooms can at any time be provided for about £5,000. Patients are already under treatment, and at present a charge of £2 2s. per week has to be made to cover expenses. Only those patients are admitted who are unable to pay the full cost of treatment in a private institution, and whose condition affords a reasonable expectation of cure or permanent improvement. A Medical Board decides as to the suitability of each case. A medical officer resides at the Sanatorium, and each week a visit is made by one of the four honorary visiting physicians.

O. W. OGDEN, M.D.,
Hon. Secretary.

HEALTH STATIONS.

EXMOUTH.



EXMOUTH is excellently placed on sloping upland at the eastern side of the estuary of the Exe. It has a south-west aspect. The level promenade of one and a half miles along the sea-front, public gardens, and the adjuncts of a south-coast health resort furnish attractions both for the permanent resident and the temporary visitor. The climate is notable for its equability, cool in summer and comparatively warm in winter. The mean temperature for the last six winter months was 45.45° . Sunshine is abundant. Fogs are exceptional. Last year rain fell on 170 days, making a total rainfall of 25.53 inches. The relative humidity of the atmosphere is 78° . Sanitation is good. The water-supply is abundant and pure. Exmouth is an ideal residence for the subjects of asthma and bronchitis. The aged, the infirm, and young children may here spend most of their time in the open. Carefully-selected cases of arrested or chronic phthisis and other forms of tuberculosis, particularly of bones and joints in children, are able to practise open-air treatment with comfort and advantage. Convalescent cases of almost all kinds gain benefit. Exmouth can be reached from London in a little over four hours.

OLIVER EATON,
Medical Officer of Health.

[We are indebted to the courtesy of Messrs. William Pollard and Co., Ltd., of 39 and 40, North Street, Exeter, for permission to reproduce the above photograph from their new and most excellently illustrated "Book of the South-West."—EDITOR, *B. J. T.*]

REVIEWS AND NOTICES OF BOOKS.

THE ALCOHOL PROBLEM.¹

SIR VICTOR HORSLEY'S reputation is so high, and his interest in the alcohol question is so strong, that high hopes were excited when it was known that he was engaged, in conjunction with Dr. Mary Sturge, in writing a scientific manual upon the effects of alcohol upon man. These hopes are more than realized. Their monograph must for many a year be accepted as the authoritative scientific pronouncement on the subjects discussed. The authors have accomplished two objects: they have written a really scientific work, giving chapter and verse for all their statements, and they have written so simply and so effectively that no one who reads can fail to be impressed. The influence of alcohol upon the incidence and mortality from tubercle is, of course, discussed. Dr. Bauderon's recently published observations on this matter are quoted, as are those of Hoppe, compiled in 1899. Bauderon states that in a district in France, where the consumption of alcohol is only 12.5 litres per person per annum, the annual death-rate from tuberculosis is 3.3 per 1,000 inhabitants, while in another district, where the consumption of alcohol is 35.4 litres per person per annum, the death-rate from tuberculosis is 10.8 per 1,000. The influence of alcohol taken by the parent in deteriorating the constitution of children is well brought out, and the frequency of tuberculous disease among the children of drinkers is laid stress upon. In another section we have a very clear statement of the pernicious influence of alcohol upon the acquisition of immunity, and its diminution of the resisting power of animals to various infective disorders. These are merely samples; every page bristles with facts, and those who want to obtain really scientific data concerning the action of alcohol will find in this small volume an ample storehouse of material.

A. PEARCE GOULD, M.S.

TUBERCULOUS DISEASE OF THE HIP.²

Dr. Bruce Bennie has prepared a useful little book, based upon his experience of hip disease during many years of practice at Melbourne. The volume is chiefly devoted to an exposition of treatment by Thomas's splint, of which the author is a warm advocate. He considers that nearly all cases of hip disease are best treated by this means. Careful and minute directions are given for the making and fitting of the splint. It is shown that many of the so-called Thomas's splints in ordinary use are faulty in their construction. The latter part of the book deals briefly with the treatment of abscess and other complications.

JAMES BERRY, B.S.

¹ "Alcohol and the Human Body: An Introduction to the Study of the Subject." By Sir Victor Horsley, F.R.S., F.R.C.S., M.B., B.S. Lond., etc., and Mary D. Sturge, M.D. Lond.; with a chapter by Arthur Newsholme, M.B., F.R.C.P., D.P.H. Pp. 370. London: Macmillan and Co., Limited, 1907. Price 5s. net.

² "Rational and Effective Treatment of Hip Disease." By P. Bruce Bennie, M.A., M.D., B.S. (Melb.) Pp. xii., 108, and 9 plates. London: Baillière, Tindall and Cox. 1907. Price 5s. net.

PUBLIC HYGIENE.¹

The Italian manual of Drs. Tonzig and Ruata is intended to serve as a practical handbook for medical officers of health and other persons engaged in the work of public hygiene. It is written in a clear and simple style, and is profusely illustrated with figures of the apparatus and the microscopical appearances referred to in the text. The information given is thoroughly up-to-date, the latest methods of staining the *Spirochæta pallida*, for instance, being fully described. The practical aim of the manual is strictly adhered to throughout, and considerations of purely theoretical interest are wisely avoided. The work can be recommended to the busy man who desires to acquaint himself with the details of laboratory technique, and has not time to make his way through the more elaborate treatises of the hygienic specialist.

W. C. SULLIVAN, M.D.

AN ITALIAN VIEW OF THE TUBERCULOSIS PROBLEM.²

The declared object of the authors of "La Tubercolosi" manual, that of supplying a compact summary in a popular form for the benefit of a wider circle than that of the profession, deserves better success than we could venture to hope for it. It is to be feared that even in the less abstruse questions, such as those relating to public health and preventive measures, and to "sanatorium" and "home treatment" the lay reader may soon be finding himself out of his depth, in spite of the most "simple, concise, and popular exposition." The subject has grown too technical for the uninitiated; and we are made to realize that our teachings, if they are to be of genuine service, must either be purely practical and elementary for home use, or else exhaustive and for the exclusive use of the profession. As a fact, "La Tubercolosi" is an essentially medical book, and its most elaborate chapters are devoted to advanced problems in bacteriology and pathology. But it is sketchy, and sometimes incomplete, as must needs be the case with all miniature treatises. For instance, one of the latest contributions from Italy, Grocco's useful "Sign for Pleural Effusion," is not referred to. And, again, there can be no pretension to an up-to-date bacteriology where no mention occurs of Wright and of opsonins. The section on therapeutics has its uses as a résumé, and a good deal of clinical as well as pathological interest centres in the chapters "On Scrofulosis, Tuberculosis, and Phthisis," "On the Different Clinical Forms of Phthisis and Pulmonary Tuberculosis," and "On Early Diagnosis." Judging from the last pages, which deal with the present state of the antituberculosis campaign in Italy, abundant work lies before the local committees which are growing up everywhere out of the now extinct National League, originated in 1899 by Bacelli. In spite of its existing gaps, and of its needed readjustments, the book is likely to be valued by the practitioner; and a second edition might eventually rank as a useful work for ready reference if more thoroughly worked up, and with greater care to allow to all the authorities quoted the privilege of their own correct names. WILLIAM EWART, M.D.

¹ "Manuale Pratico dell' Igienista." By Drs. Tonzig and Ruata. Pp. 368. Milan: Hoepli. 1907. Price 5 lire.

² "La Tubercolosi." By Mario Valtorta e Gino Fanoli. Pp. 288. Milano: Manuali Hoepli. Ulrico Hoepli, Editore Libraio della Real Casa. 1907.

A POPULAR MANUAL ON CONSUMPTION.¹

The first edition of this book, comprising a popular exposition of the causes, prevention, and treatment of consumption, was officially distributed by the French Minister of Education. The present edition contains much that is chiefly valuable to medical men, presenting an admirable summary of the views held by up-to-date physicians in France. Chapters are given on predisposing causes, early diagnosis, stages of the disease, biological chemistry, bacteriology, serums and vaccines, general methods of treatment, and the remedies likely to be useful, hygienic details, the treatment of urgent symptoms and complications, climatotherapy and prophylaxis. The French antituberculosis organizations and sanatoria are also described. Prominence is given to indications from blood-pressure, pulmonary exchanges, and urinary chemistry, several remedies being strongly recommended which are little known in this country.

F. RUFENACHT WALTERS, M.D.

HÆMOPTYSIS IN PULMONARY TUBERCULOSIS.²

Dr. Barbary, in his interesting monograph, holds that hæmoptysis is almost always due to increased arterial tension. He says that there are three main types of increased tension—viz., transitory, unstable, and permanent—but he does not consider that there is a form of increased tension solely connected with tuberculosis. It is difficult to deny that the cause of hæmoptysis is almost always increased arterial tension, as two of the forms may easily escape notice, and the causes given for the increased tension are so numerous and far-reaching that it is impossible to prove that one, at least, was not present. The author's treatment is necessarily lowering.

GEORGE A. CRACE-CALVERT, M.B.

HAY-FEVER.³

Mr. William Lloyd's new brochure contains a brief but efficient summary of current opinions prevailing on the pathology of hay-fever and hay-asthma. As regards the causation and treatment of these paroxysmal and most incapacitating affections, some novel views are presented. The work merits careful consideration.

FRANCIS HARE, M.D.

THE TREATMENT OF PULMONARY TUBERCULOSIS.⁴

The treatment of the consumptive often taxes the resources of the practitioner to their uttermost. The perplexed physician will find in

¹ "La Grande Faucheur" [The Great Reaper]. By Dr. Fernand Barbary. Second Edition. Pp. 340. Paris: De Rudeval. 1907. Price 7 francs.

² "Interprétation Nouvelle du Mécanisme de l'Hémoptysie Tuberculeuse: Thérapeutique préventive de l'Hémoptysie." Dr. Fernand Barbary. Pp. 111. Paris: F. R. de Rudeval, 4, Rue Antoine Dubois. 1905.

³ "Hay-Fever, Hay-Asthma: its Causes, Diagnosis, and Treatment." By William Lloyd, F.R.C.S.E., Surgeon-in-Charge of the Nose, Ear, and Throat Department, Kensington General Hospital; Surgeon to the Nose and Throat Department, St. Pancras and Northern Dispensary. London: Henry J. Glaiser. 1907. Price 3s. 6d. net.

⁴ "Pulmonary Tuberculosis: its Modern and Specialized Treatment." By Albert Philip Francine, A.M., M.D., Director of the Pennsylvania Society for the Prevention of Tuberculosis. Second edition. Pp. 266. Illustrated. Philadelphia and London: J. B. Lippincott Company. 1907. Price \$2.

Dr. Francine's able work just such a record of recent advances in phthisio-therapy as he requires. Here are discussed the action and application of hygienic measures, diet, climate; but the chapters of principal merit and value are those devoted to an exposition of the use of tuberculin and the employment of serum-therapy. Drugs also receive consideration. The book is an eminently practical one, and will appeal to specialist and general practitioner, and to both we earnestly commend it.

MANUALS FOR MEDICAL PRACTITIONERS.

A new and most helpful series of handbooks have recently appeared under the general title of "The Oxford Medical Manuals,"¹ the editors of which, in the choice of authors and subjects, have had the valuable advice and assistance of Professor William Osier. Such of the volumes of this series as we have had the opportunity of studying are eminently calculated to meet the requirements of the busy yet conscientious practitioner, anxious to keep abreast of the times in the scientific practice of the healing art.

Dr. Samuel Gee's volume² will be welcomed by all his old students at Barts, and will instruct many who were not privileged to come under the direct influence of this distinguished clinician and experienced teacher. The aphorisms collected by Dr. Thomas J. Norder are the unique feature of the book, but all the essays are suggestive and helpful.

Mr. H. Edmund Boyle's well-illustrated guide³ to the production of anæsthesia is a model of concise, lucid, and reliable exposition, and one which should be in the hands of every practitioner.

Mr. Percy Sargent's expression of experiences⁴ gained during some eight years associated with the surgical side of St. Thomas's Hospital will be of particular service to house surgeons and those called upon to deal promptly and effectively with various forms of surgical emergency.

Mr. Harold Barwell's little treatise⁵ on laryngeal affections admirably meets the requirements of those needing direction in the practical management of this special class of cases. It is concise, well proportioned, judiciously illustrated, and eminently practical throughout, and should prove one of the most popular and helpful manuals of the series.

Practitioners often find their greatest perplexities and anxieties in the maintenance of an effective and rational management of minor ailments. The pathology and treatment of life's lesser physical disabilities and ills are ably dealt with in Dr. Leonard Williams' collection of clinical

¹ "The Oxford Medical Manuals." Edited by J. Keogh Murphy, M.A., M.D., M.C., F.R.C.S., and G. A. Sutherland, M.D., F.R.C.P. London: Henry Frowde, and Hodder and Stoughton. 1907. Price 5s. net. each volume.

² "Medical Lectures and Aphorisms." By Samuel Gee, M.D. Second edition. Pp. 307.

³ "Practical Anæsthetics." By H. Edmund G. Boyle, M.R.C.S., L.R.C.P. Pp. 178, with 11 plates and 11 figures.

⁴ "Surgical Emergencies." By Percy Sargent, M.A., M.B., B.C., F.R.C.S. Pp. 256.

⁵ "Diseases of the Larynx." By Harold Barwell, M.B., F.R.C.S. Pp. 266, with 12 plates and 21 figures.

essays.¹ Everyday affections, such as coughs and colds, indigestion, gastro-intestinal derangements, rheumatism, goutiness, and the like, are dealt with, but with a grace of style and wealth of diction and a true clinical insight which makes the ordinary luminous and the commonplace matter for the most scientific inquiry. We urge all practitioners to study this volume.

We wish particularly to commend to the notice of all practitioners the very able, suggestive, and helpful manual of Dr. Harry Campbell on treatment.² It consists of a series of essays interesting in subject, graceful in form, reminiscent and personal in character, and often marked by a piquant humour. Practitioners of all ages will find abundant material for serious contemplation, and no little of practical service in these most attractive pages.

Dr. H. L. McKisack's manual of medical diagnosis,³ written on somewhat novel but thoroughly practical and convenient lines, will appeal to students and practitioners. He deals, according to dictionary order, with the signs and symptoms which guide and govern the clinician in his investigation of disease in a manner which is explicit yet succinct, condensed and yet thoroughly comprehensive and sufficiently complete. No doubt some will take exception to certain methods and procedures here advocated, and will regret omission of favourite tests and devices, but as an exceptionally satisfactory and serviceable reference work we unhesitatingly commend this directory for the diagnostician. The illustrations are excellent.

Records of personal observation and study in matters medical are always suggestive and often profitable, and we could wish that such collections of essays as that of Dr. Harold Scott⁴ might be multiplied. He has wisely brought together in one volume a number of contributions, some already published elsewhere, dealing with such matters as cranial injury, pleural effusion, empyema, disseminated sclerosis, examination of feces, and typhoid fever. The principal essay deals with syphilis in the army. The volume is labelled "first series," and if those studies which are to follow equal these in general interest and scientific value they will be welcome.

Practitioners requiring guidance in the selection of a sanatorium will do well to consult the "British Sanatoria Annual,"⁵ which gives references to eighty-one institutions dealing with consumptive cases. It is to be regretted that the descriptions and particulars are not arranged upon a definite scheme, and that a considerable number of the sanatoria and hospitals have not complied with the request of the

¹ "Minor Maladies and their Treatment." By Leonard Williams, M.D., M.R.C.P. Second thousand. Pp. 383. London: Baillière, Tindall and Cox. 1907. Price 5s. net.

² "On Treatment." By Harry Campbell, M.D., B.S., F.R.C.P. Pp. 421. London: Baillière, Tindall and Cox. 1907. Price 5s. net.

³ "A Dictionary of Medical Diagnosis: a Treatise on the Signs and Symptoms observed in Diseased Conditions." By Henry Lawrence McKisack, Physician to the Royal Victoria Hospital, Belfast. Pp. 583, with 77 illustrations. London: Baillière, Tindall and Cox. 1907. Price 10s. 6d. net.

⁴ "Post-Graduate Clinical Studies for the General Practitioner." First Series. By H. Harold Scott, M.B., M.R.C.S., L.R.C.P., Late Medical Officer in Charge of Hospital for Women and Children, Maritzburg. Pp. 166, with 35 plates. London: H. K. Lewis. 1907.

⁵ "British Sanatoria for the Open-Air Treatment of Tuberculosis for 1907-1908." London: John Bale, Sons and Danielsson, Ltd. 1907.

publishers for authoritative information, the consequence being that the volume is far from up-to-date.

Dr. J. W. Ballantyne, in issuing the fifth volume of the "Encyclopedia and Dictionary of Medicine and Surgery,"¹ which is appearing under his able editorship, has completed the first half of his work, which will prove of the greatest service to practitioners for ready and reliable reference. The fifth volume contains an article by Dr. P. McBride dealing with tuberculosis of the larynx.

In Miss Birt's very modest but most practical brochure² medical practitioners, nurses, and housewives will find a short but valuable collection of simple recipes designed to meet the requirements of the invalid and convalescent.

THE MANAGEMENT OF CHILDHOOD.

Among the numerous works now available dealing with the physiology and pathology of childhood none are deserving of greater study than the comprehensive and authoritative treatise of Professor T. M. Rotch.³ In this monumental work almost every phase and disorder of child life receives original and masterly exposition. In no other work is the problem of infant life more lucidly dealt with. Professor Rotch's methods for the substitute-feeding of infants have been made known by Dr. Ralph Vincent in this country, and the American percentage system has been most successfully adopted in the London Infants' Hospital. The section dealing with the feeding of infants we specially commend to the notice of all family practitioners. Considerable space is devoted to the description of the different forms of tuberculosis. The work throughout is admirably illustrated, and only requires to be known to be prized by all students of child-life throughout the civilized world.

Among benefactors of infant life the late Professor Budin occupies a foremost place. His labours in Paris have been of immense national service to France. It is well that his far-famed work should have appeared in English dress.⁴ Dr. Maloney has fulfilled his responsible task with much judgment and conspicuous ability. Sir Alexander Simpson's introduction should be sufficient to recommend it to all British practitioners. The volume consists of ten lectures, the first four dealing with the clinical features and requirements of premature and weakly infants. The most valuable sections are those devoted to the problems of feeding. We are glad to see that Budin is of opinion that "the evil effects attributed to rearing young babies on undiluted milk are, in reality, due to overfeeding," but we are convinced that he underestimates the drawbacks of sterilization. Although Budin rightly

¹ "Green's Encyclopedia and Dictionary of Medicine and Surgery." Vol. V. Inulin to Lumbar Puncture. Pp. 356. Edinburgh and London: William Green and Sons. 1907. Price 15s.

² "Invalid and Convalescent Cookery." By Mary E. Birt. Pp. 23. Bristol: John Wright and Co. 1907. Price 6d.

³ "Pediatrics: The Hygienic and Medical Treatment of Children." By Thomas Morgan Rotch, Professor of Pediatrics, Harvard University. Fifth edition, rearranged and rewritten. Pp. 1060. With coloured plates and 213 figs. London and Philadelphia: J. B. Lippincott Company. 1907. Price 25s. net.

⁴ "The Nursing: The Feeding and Hygiene of Premature and Full-time Infants." By Pierre Budin. Authorized translation by William J. Maloney, M.B., Ch.B. With an introduction by Sir Alexander R. Simpson, M.D., LL.D., D.Sc. Pp. xxiv, 199. With 111 diagrams in colour and other illustrations. London: The Caxton Publishing Company. 1907.

contents that "breast-feeding is our special aim," he recognizes that for many artificial feeding is unavoidable. His chapter on "Consultations for Nurslings," and the "Goutte de Lait" movement deserves careful study at the present time, when measures for the protection of child life are receiving attention in this country. Numerous and instructive diagrams add greatly to the value of the work. Although we cannot endorse all that is here advised, we have no hesitation in strongly recommending the work to the critical study of all engaged in the study of infancy.

As a particularly compact and helpful guide for the newly-qualified practitioner, Dr. G. A. Sutherland's little work,¹ issued as one of the excellent "Oxford Medical Manuals," deserves high commendation. It deals with the more important diseases peculiar to infancy and childhood in a direct and judiciously dogmatic manner, and in matters of treatment, avoiding perplexing diffuseness of expression and indefiniteness of advice, it very satisfactorily indicates "the practice of one based on the teaching of many."

In the same series appears Dr. H. G. Adamson's handbook on cutaneous affections in children,² a thoroughly reliable guide for the practitioner, presenting essentials in a concise and definite form, and affording practical instruction in management. There are good illustrations, numerous formulæ, a useful summary of contents, and a helpful index—in fact, all the elements which make for success in a book of this kind.

Every student of child life should be acquainted with Dr. Leonard Guthrie's collection of lectures and addresses,³ the majority of which have hitherto been unpublished. They deal with matters but scantily referred to in most works on pediatrics, and yet of the greatest practical importance, as is sufficiently evidenced by the bare mention of the titles of some of the chapters: "Effects of Emotion on Health," "Types of Neurotic Subjects," "Fears of Neurotic Children," "Fretting and Homesickness," "Disorders of Sleep," "Moral Failings," and many other conditions in which the nervous element looms large. Special praise should be given to the study of idioglossia. The author is a graceful and effective writer, with a wealth of illustration which comes from wide general reading, and a fund of humour and sympathy indicative of keen observation of men and things and children.

In the last Annual Report of the Metropolitan Asylums Board⁴ there are published the reports of the medical officers of the Seaside Homes for Children—St. Anne's Home, Herne Bay; East Cliff House, Margate; and Millfield, Rustington—where a number of London's tuberculous children are sent.

¹ "The Treatment of Disease in Children." By G. A. Sutherland, M.D., F.R.C.P., Physician to Paddington Green Children's Hospital. Pp. 311. London: Henry Frowde, and Hodder and Stoughton. 1907. Price 5s. net.

² "The Skin Affections of Childhood, with Special Reference to Those of More Common Occurrence, and their Diagnosis and Treatment." By H. G. Adamson, M.D., M.R.C.P. Pp. 287. With 12 plates and 5 figs. London: Henry Frowde, and Hodder and Stoughton. 1907. Price 5s. net.

³ "Functional Nervous Disorders in Childhood." By Leonard G. Guthrie, M.A., M.D., F.R.C.P., Senior Physician to Paddington Green Children's Hospital. Pp. 300. London: Henry Frowde, and Hodder and Stoughton. 1907. Price 7s. 6d. net.

⁴ Metropolitan Asylums Board. Annual Report for the Year 1906. Ninth year of issue. Pp. 350. London: Printed by McCorquodale and Co., Ltd. 1907. Price 5s.

THE COUNTRY LIFE.

Whatever "open-air treatment" may or may not have accomplished, it certainly has done much to quicken interest in all enterprises making for the maintenance of the hygienic life, and has aroused intelligent attention to the prophylactic virtues of the country-side. Recent literature stands as witness. Books on the wild world of the open air, Nature-study in all its infinite varieties, and pursuits, pastimes, and contemplations of country life, come thick and fast; and 'tis well. Among our truest word-painters of unspoiled Nature, Mr. Walter Raymond has few rivals. His latest work consists of a series of rustic sketches¹ of Somerset characters and customs, each a perfect miniature of men and manners now, alas! fading away into the by-gones. It is an ideal volume for both physician and patient, and each will find special interest in the wares of "The Snail-Merchant," "because they be so good for the chest."

An equally attractive volume is that which comes from the gifted pen of the daughter of that great Nature-lover, Charles Kingsley. In "Eversley Gardens and Others"² Miss Rose G. Kingsley has given us a charming collection of sketches of horticultural delights as experienced in simple country life. The book contains many technical details concerning the culture of plants and flowers, and particularly roses, and numerous practical suggestions which will profit the wise.

As a practical manual of routine gardening, the well-arranged directory, diary, and guide prepared by Mr. George Gordon should be in the hands of all fortunate to possess a garden.³

English entomologists and all patriotic naturalists should welcome Mr. Austen's very valuable monograph⁴ on our British Diptera, with its most faithful depictions of natural colours and structural characters. Blood-sucking flies are now receiving much attention from those interested in the causation and dissemination of certain diseases in man and animals, and to such this work will be most valuable. It will doubtless tempt some country dwellers to collect and study this important group.

The Garden City Movement and like enterprises afford welcome evidence of the growing perception of the dangers incident to urbanization, and the desire for a re-creation of our busy centre under hygienic conditions, and the series of papers and addresses edited by Mr. Thomas Adams⁵ gives much information as to the lines along which rational housing reform is being attempted.

Those interested in the very practical subject of the construction of

¹ "The Book of Crafts and Character." By Walter Raymond. Pp. 272. London: Hodder and Stoughton. 1907. Price 6s.

² "Eversley Gardens and Others." By Rose G. Kingsley. Pp. 280, with 18 illustrations. London: George Allen. 1907. Price 6s. net.

³ "The Gardening Year-Book and Garden Oracle." By George Gordon, V.M.H. The *Gardeners' Magazine* Office, 148 and 149, Aldersgate Street, E.C. 1907. Price 1s. net.

⁴ "Illustrations of British Blood-Sucking Flies." With notes by Ernest Edward Austen, Assistant, Department of Zoology, British Museum (N.H.). Pp. 74, and 34 plates. London: Printed by order of the Trustees of the British Museum. 1906. Price 25s.

⁵ "Housing in Town and Country: How to Solve the Problem of Overcrowding in Towns and Depopulation of Rural Districts." Edited by Thomas Adams. Pp. 61. London: Garden City Association, 602-603, Birkbeck Bank Chambers, Holborn, W.C. 1906. Price 6d. net.

hygienic homes, whether for the healthy or the sick, for permanent residence or holiday resort, should consult Mr. J. H. Elder-Duncan's charming album of illustrations and plans by well-known architects,¹ and Mr. Douglas Allport's artistic and suggestive brochure.²

As to the application of decorative art to the requirements of English homes, no one should miss seeing the beautiful and instructive volume issued by the *Studio* at a price which is a marvel, and brings it within the reach of all true lovers of art.³

Lovers of the country-side should not fail to possess the remarkable "Douglas English Nature Books,"⁴ which are truly wonderful living pictures of wild life.

Open-air patients and, indeed, all real lovers of the beautiful in Nature and poesy, should have their pockets lined with the dainty and in every way delightful "Treasures" which the enterprise and artistic ingenuity of Mr. Albert Broadbent have made available.⁵

Farming, according to Miss Park,⁶ might profitably be taken up as a pursuit by many women, and certainly her brochure suggests practical measures which might be within the reach of some arrested tuberculous cases.

Country dwellers and all concerned in dairy farming and "the milk problem" will find much information and instruction in Mr. A. H. Murray's "Dairies Directory."⁷ It is a marvellous collection of names and addresses of dairy factories, dairies, milk stations, etc., throughout the world.

A particularly charming and instructive handbook has recently been issued by the Homeland Association on English church architecture.⁸ This is a companion for the pocket which we have no hesitation in bringing to the notice of our readers.

Another recent volume which we would commend to every fresh-air patient and all followers of the simple life, with its rural joys and songs and Nature-studies, is Mr. Edward Thomas's beautiful little volume,⁹

¹ "Country Cottages and Week-End Homes." By J. H. Elder-Duncan, Editorial Secretary of the *Architectural Review*. Pp. 224. With numerous illustrations and plans. London: Cassell and Company, Ltd. 1906. Price 5s. net.

² "Inexpensive Holiday Homes." By Douglas Allport. Second edition. Pp. 52. With illustrations and plans. London: Albery and Co., 20 and 21, Queenhithe, E.C. Price 1s. net.

³ "The *Studio* Year-Book of Decorative Art." Pp. 228. With many illustrations. London: The Offices of the *Studio*, 44, Leicester Square, W.C. 1907. Price 5s. net.

⁴ "One Hundred Photographs from Life of the Shrew-Mouse, the Dormouse, the House-Mouse, the Field-Mouse, the Meadow-Mouse, and the Harvest-Mouse." With notes and observations by Douglas English. "One Hundred Photographs from Life of British Birds." With extensive notes on their habits. By R. B. Lodge. London: S. H. Bousfield and Co., 12, Portugal Street, W.C. 1907. Price 1s. each.

⁵ "The Broadbent Treasures of Selections from the Poets." Manchester: Albert Broadbent, 257, Deansgate. Price 3d. each; 12 different, post free, 3s.

⁶ "Farming for Ladies." By Edith E. Park. Pp. 27. London: Vinton and Co., Ltd., 8, Bream's Buildings, Chancery Lane, E.C. 1907. Price 1s. net.

⁷ "Dairies of the World: A Directory of the World's Dairies." By A. H. Murray, Editor of the *Illustrated Dairy*. Pp. 400. Birmingham: The *Illustrated Dairy*, Ltd., 48, Rose Road, Harborne. 1907. Price 7s. 6d.

⁸ "Our Homeland Churches and How to Study Them." By Sidney Heath. Pp. 128. Illustrated. London: The Homeland Association, Ltd. 1907. Price 2s. net.

⁹ "The Pocket Book of Poems and Songs for the Open Air." Compiled by Edward Thomas. Pp. 334. London: E. Grant Richards. 1907. Price 4s. net.

which is a delightful anthology, "meant to please those lovers of poetry and the country who like a book that can always lighten some of their burdens or give wings to their delight, whether in the open air by day or under the roof at evening."

MOTORING, CARAVANNING, AND CAMPING.

Modern needs are discovering novel methods for rest, exercise, and recreation. Cycling has accomplished much for the urban dweller as well as for the rural resident. Motoring has now been proved to be of considerable service in the maintenance of health, and, judiciously employed, in the management of certain forms of disease. We have ourselves witnessed its beneficial action in the treatment of a considerable number of consumptive cases. Recent investigations have shown that motoring is capable of raising the opsonic index. Every sanatorium should possess a motor. Among the numerous new volumes dealing with the mechanism of the automobile, we specially commend the instructive and well-illustrated work of Mr. W. Poynter Adams.¹

Those contemplating the purchase of a motor should consult a particularly well-arranged and most informing guide published by the Motor Press.²

Caravanning is an ancient form of life and locomotion. It has extensive possibilities for hygienic peregrination. We have recently inspected one of the modern caravans specially fitted for touring. It costs about £100. For some chronic consumptives it might afford an almost ideal home. The delights of caravanning have been most artistically portrayed by Mr. Bertram Smith in his recently published charming handbook.³ To all who would take to the open road we commend this volume.

Caravans, we understand, may now be obtained on hire at prices ranging from 6 to 15 guineas a month.⁴

For camping out for health or holiday, or as a useful annexe to a sanatorium or a pleasant adjunct to a hygienic home, a good tent is possessed of many advantages. We have recently had an opportunity of inspecting one particularly ingenious and exceptionally well-constructed—the Siesta Tent, concerning which we think many of our readers would be pleased to receive information.⁵

Cyclists desiring to combine the advantages of the wheel with the open-air life of the camper would do well to join the all too little known Association of Cycle Campers.⁶

¹ "Motor-Car Mechanism and Management." Part I.: "The Petrol Car." By W. Poynter Adams. Second edition, revised. Pp. 204. With 36 illustrations. London: Charles Griffin and Co., Ltd. 1907. Price 5s. net.

² "The Car to Buy: Containing a Complete List of Motor Vehicles of all Classes, with Full Particulars as to Prices, Records, etc." Alphabetically arranged and classified. London: The Motor Press, 22 and 23, Piccadilly Mansions, W. 1907. Price 3s. 6d. cloth; 5s. leather.

³ "The Whole Art of Caravanning." By Bertram Smith. Pp. 112. With 16 illustrations from photographs. London: Longmans, Green and Co. 1907. Price 2s. 6d. net.

⁴ Particulars regarding the hire of touring caravans may be obtained from Mr. Bertram Smith, Broomlands, Beattock, N.B. "The Caravan Club of Great Britain and Ireland" has recently been constituted. Applications for membership should be sent to the Hon. Secretaries, c/o the Editor, *Health Resort*, 140, Wardour Street, W.

⁵ The Siesta Tent is made by the Siesta Company, Harrogate.

⁶ Particulars of the Association of Cycle Campers may be obtained from the Secretary, Mr. Alex. P. Moeller, 72, Hampden Road, Hornsey, N.

THE HEALTH TOURIST.

Much disappointment and harm often follows from the all too prevalent indiscriminate and indeterminate choice of a health resort. The health-seeker should always be guided by his medical adviser, who should best know the powers, limitations, and idiosyncrasies of his patient. There is no lack of publications dealing with the many holiday and health stations which clamour for popularity.

We are glad to welcome and to be able to recommend "The Holiday 'Whitaker,'"¹ which is an admirably arranged, concise, and informing illustrated guide to the holiday and health resorts of the United Kingdom, which every judicious head of a family should possess.

Medical practitioners and others having to advise or arrange for health or holiday travel for their patients or friends would do well to acquaint themselves with the long-established and thoroughly reliable *Travellers' Gazette*,² published monthly by those universal providers of travel information, Messrs. Thomas Cook and Son.

For those requiring reliable instruction as to ways and means for colonial and foreign travel, and authoritative information regarding the chief spas and principal health resorts in Great Britain, we commend the very comprehensive "Bradshaw,"³ edited by Professor A. H. Keane and Mr. Stanley Reed. It is a volume which should delight the heart of the American, and it is certainly a reference work which should be within the reach of all.

Among the immense numbers of visitors who rush every season to the various resorts along the Riviera, there are few who know anything of the delights that come from loitering through the picturesque and unsophisticated district of the "Midi." To all who propose to visit the South of France this winter we commend the very suggestive and practical handbook of Mr. John W. Potter, of Nice.⁴

Among volumes recently received, reference may be made to the very up-to-date and attractively illustrated guide to the Pyrenees, prepared by Mr. Charles Dawbarn.⁵

Torquay has rightly won great distinction as one of our most attractive winter stations. All residents and visitors should see Mr. Percival H. W. Almy's new handbook, published by that most praiseworthy body, the Homeland Association.⁶

¹ "The Holiday 'Whitaker.'" Summer edition (1907). Pp. 400, and over 250 illustrations. London: J. Whitaker and Sons, Ltd., 12, Warwick Lane, E.C. Price 1s. 1907.

² *The Travellers' Gazette*. An illustrated journal devoted to travel. London: Thomas Cook and Son, Ludgate Circus, E.C. Price 3d.

³ "Bradshaw's Through Routes to the Chief Cities of the World." Containing descriptive routes of the chief railways, ocean lines, and caravan tracks; maps, plans, and vocabularies. Edited by Professor A. H. Keane, LL.D., and Stanley Reed. Pp. 654. London: Henry Blacklock and Co., Ltd., Bradshaw House, Surrey Street, Strand. 1907. Price 5s. net.

⁴ "Some Summer Resorts in the South of France." By John W. Potter, F.R.C.S. Pp. 134. Second edition. London: The Health Resorts Bureau, 27, Chancery Lane, W.C. 1907. Price 1s. 6d. net.

⁵ "The Picturesque Pyrenees." Pp. 143. Illustrated. Compiled and edited by Charles Dawbarn. London: "Pall Mall" Press, 12-14, Newton Street, Holborn, W.C. 1907. Price 6d.

⁶ "Torquay and its Surroundings." With ordnance map, plan, and illustrations. Pp. 116. London: The Homeland Association, Ltd., 22, Bride Lane, E.C. 1907. Price 1s. net.

Reference should also be made here to the most artistic, valuable, and in every way charming volume which was presented to each member of the British Medical Association visiting Exeter this summer. Such a handsome work will take a permanent place as a reliable and thoroughly authoritative reference volume on the West Country.¹

The enterprising Great Western Railway have issued a beautifully printed and illustrated volume on Devon,² with interesting and instructive letterpress, forming a model handbook, which no lover of the West-land should fail to possess.

Strathpeffer, the "Harrogate of Scotland," is a spa of peculiar attractiveness, and several of the resident medical advisers have collaborated in the preparation of a reliable guide,³ which their confrères and others intending a visit to this charming health resort of the far north would do well to consult.

Both the healthy and the sick are in great measure dependent on our railway companies for means of transit, and Mr. G. B. Lissenden has merited the thanks of all by compiling an informing manual⁴ which should enable the passenger to keep the law and the commandments of railway travel, and secure the maximum of comfort with the minimum of trouble.

LITERARY WORKERS.

"Literature and the Arts have indeed given many hostages to consumption," and the truth of such a statement is made manifest by Dr. J. B. Huber in his recent work on "Consumption and Civilization." But it should be remembered that literary and artistic work may at least in many of its forms be carried out by those who are required to live the open-air life. Robert Louis Stevenson and John Addington Symonds stand out as conspicuous examples, and Davos still has its artistic circle. Indeed, literature and art are pursuits which should be commended to many a patient as desirable recreations, and which may afford, in a measure at least, definite life-work. All ambitious to claim the title of author, and particularly those engaged in any form of literary work, should study the very practical and serviceable manual of Mr. F. Howard Collins.⁵ It is a most successful attempt to codify the best of modern typographical practices.

Mr. Paul Allardyce's amusing and helpful handbook⁶ should also be within the reach of all who would aptly wield the pen.

¹ "A Book of the South-West." Printed for the Seventy-fifth Annual Meeting of the British Medical Association, held at Exeter in 1907. Pp. 220. With many photographic reproductions. Exeter: William Pollard and Co., Ltd. 1907.

² "Devon: The Shire of the Sea Kings." Pp. 268. With map and illustrations. London: Great Western Railway Company, Paddington Station, W. 1906.

³ "Strathpeffer Spa Medical Guide." By W. Bruce, M.D., LL.D.; E. H. Duncan, M.A., M.B.; H. W. Kaye, B.A., M.B.; J. Pender Smith, M.B., C.M. Pp. 77. Illustrated. Strathpeffer and Dingwall: George Souter.

⁴ "The Railway Passenger's Handbook: A Complete Guide to Railway Travelling." By George B. Lissenden. Pp. 94. London: George Routledge and Sons, Ltd.

⁵ "Author and Printer: A Guide for Authors, Editors, Printers, Correctors of the Press, Compositors, and Typists." With full list of abbreviations. By F. Howard Collins. Second edition. Pp. 408. London: Henry Frowde, Oxford University Press. 1905. Price 5s. net.

⁶ "Stops; or, How to Punctuate: A Practical Handbook for Writers and Students." By Paul Allardyce. Pp. 91. London: T. Fisher Unwin. Price 6d. net.

In the systematizing of the work of every library, hospital, sanatorium, and, indeed, in much medical practice, as well as the effective use of a home collection of books, some method of indexing is essential. To all who would know the principles and methods of this now highly elaborated and well-defined of modern necessities we strongly recommend the able handbook¹ of the Librarian of the Royal Medical and Chirurgical Society of London.

REPORTS AND OFFICIAL PUBLICATIONS.

Dr. Francis J. Allan, in his recently issued report² for the City of Westminster, gives tabular information concerning the occupation of adult males and of husbands or parents of persons who died from tuberculous disease during 1901-1906 in his district. He shows that "even if the sale of milk from tuberculous cows be stopped, tuberculosis in children will not be entirely prevented." He also draws attention to the danger of allowing consumptives to be engaged in the milk trade.

Dr. James Niven has been foremost among administrative pioneers of scientifically directed anti-tuberculosis work, and his report³ contains valuable information concerning the economic and hygienic aspects of the problem, and is a volume which all medical officers of health and sanitarians should consult.

Dr. H. W. Armstrong, Medical Officer of Health for the City and County of Newcastle-upon-Tyne, has issued a valuable report⁴ on the causation, extent, and fatality of tuberculosis, with suggestions concerning administrative means for the establishment of a special authority to administer and execute measures required for the national treatment and prevention of tuberculosis and the promotion of public health.

The collection of papers and scientific records which Professor Sheridan Delépine⁵ has edited no one engaged in the scientific direction or conduct of public health work can afford to neglect. It contains notable contributions from such authorities as Professor Thomas Oliver, Colonel J. Lane-Notter, Dr. Arthur Newsholme, and reports on researches carried out with the supervision of the editor. To those interested in the problem of child life, Dr. James Niven's article on "Feeding in Relation to the Health of the Young" will prove invaluable.

The National Association of America for the Study and Prevention of Tuberculosis, judged by its latest volume of "Transactions,"⁶

¹ "Manual of Practical Indexing." By Archibald Leycester Clarke. Pp. 184. London: Library Supply Company, 181, Queen Victoria Street, E.C. 1905.

² Annual Report on the Statistics and Sanitary Condition relating to the City of Westminster for the year 1906. By Francis J. Allan, M.D., C.M., D.P.H., F.R.S.E. London: Harrison and Sons, St. Martin's Lane, W.C. 1907.

³ Report on the Health of the City of Manchester for 1905. By James Niven, M.A., M.B. Manchester: Henry Blacklock and Co., Ltd., Albert Square. 1906.

⁴ "Tuberculosis: Its Casualties, Causes, and Control." By H. E. Armstrong, M.D., D.P.H. Newcastle-upon-Tyne: Eassey and Best, 142, Pilgrim Street. 1907.

⁵ *Archives of the Public Health Laboratory of the University of Manchester.* Edited by A. Sheridan Delépine, M.Sc., M.B., Ch.M., Director of the Laboratory and Proctor Professor of Comparative Pathology and Bacteriology. Vol. i. Pp. 452. London and Manchester: Sherratt and Hughes. 1906.

⁶ National Association for the Study and Prevention of Tuberculosis. Transactions of the Second Annual Meeting, Washington, D.C. Secretary: Dr. Henry Barton Jacobs, 11, Mt. Vernon Place West, Baltimore, Md., U.S.A. Pp. 638. Published by the Press of the New Era Printing Company, Lancaster, Pa., U.S.A. 1906.

furnishes abundant justification for its existence, and sets an example of scientific industry which should find imitators in all civilized countries. All participating in the production of this bulky work merit sincerest congratulation. In addition to the Report and Address of Dr. Lawrence F. Flick, there are no less than forty-three communications by American experts. Several important papers deal with tuberculosis in early life. No student of the tuberculosis problem should be unmindful of this important volume.

All engaged in the development of municipal anti-tuberculosis dispensaries would do wisely to consult the report¹ of the clinic established in New York City.

The State of Wisconsin has issued a report² on the prevalence of tuberculosis in that important section of the United States.

Those interested in the construction and maintenance of sanatoria would do well to refer to the very detailed official descriptions of German State sanatoria for consumptives, and the records of their achievements.³ The accompanying plans add greatly to the value of these authoritative volumes as works of reference.

Charities and the Commons, the official journal of the Charity Organization Society of the City of New York, wisely devotes considerable attention to anti-tuberculosis measures and methods. In the issue for August 3 last, Dr. H. B. Favill, President of the Chicago Tuberculosis Institute, contributes a suggestive article on "Playgrounds in the Prevention of Tuberculosis."⁴

*The American Journal of Clinical Medicine*⁵ for June last contains a thoughtful paper on "Alcohol and Tuberculosis," by Dr. Holitscher, of Pirkenhammer, near Carlsbad, in Germany.

¹ First Report of the Clinic for the Treatment of Communicable Pulmonary Diseases. Department of Health, City of New York. Pp. 46. 16 Plates. New York. 1906.

² Report of the Wisconsin State Tuberculosis Commission. President: Gustav Schmitt, Milwaukee. Pp. 43. Madison, Wis.: Democrat Printing Co. 1905.

³ *Tuberkulose-Arbeiten aus dem Kaiserlichen Gesundheitsamte*. Von Dr. Hamel. Heft iv., S. 203, 5 Tafeln. 1905. Heft v., S. 295, 7 Tafeln. 1906. Berlin: Verlag von Julius Springer.

⁴ *Charities and the Commons* is published weekly at the offices of the Charity Organization Society, 105, East 22nd Street, New York, U.S.A. Price \$2 a year.

⁵ *The American Journal of Clinical Medicine* is published monthly by the Clinic Publishing Co., 1416 E. Ravenswood Park, Chicago, U.S.A.

ERRATA.—In our last issue the following references were, unfortunately, omitted from the bottom of page 269 :

¹ "Syphilology and Venereal Disease." By C. F. Marshall, M.D., M.Sc., F.R.C.S. Pp. 509, and 5 plates. London: Baillière, Tindall and Cox. 1906. Price 10s. 6d. net.

² "The Surgery of the Heart and Lungs: A History and Résumé of Surgical Conditions found therein, and Experimental and Clinical Research in Man and Lower Animals, with Reference to Pneumonotomy, Pneumonectomy and Bronchotomy, and Cardiomy and Cardiorrhaphy." By Benjamin Merrill Ricketts, Ph.B., M.D. Pp. 510, and 87 plates. New York: The Grafton Press, 70, Fifth Avenue. 1904.

³ "A Synopsis of the British Pharmacopœia (1898)." By H. Wippell Gadd, F.C.S. Sixth edition. Containing a synopsis of the Poison Laws of Great Britain and Ireland. Pp. 227. London: Baillière, Tindall and Cox. 1907. Price 1s. net.

PREPARATIONS AND APPLIANCES.

HYGIENIC CLOTHING.

IN the preservation of health and the treatment of disease the important question of dress is too often neglected. This is particularly true in the management of the consumptive and the tuberculously disposed. For the proper conduct of open-air treatment and the regulation of a hygienically directed life rational clothing is essential. The Deimel Fabric Co. supply underwear particularly well suited to the requirements of the class of case to which we have referred. For those desiring a particularly comfortable, sanitary, and warm cotton garment, DR. DEIMEL'S "LINEN MESH"¹ may be strongly recommended. It consists of a two-ply composite thread, the principal part of which is of superior linen yarn, together with a selected vegetable fibre having great elasticity and lightness. After personally trying these goods, we can testify to the readiness with which the moisture of perspiration is transmitted, the warmth and comfort provided for the body, and their durability and satisfactory washing qualities.

Although the consumptive and open-air liver may have lost fear of the supposed evil effects of "getting wet," it must be admitted that there is no advantage in needless exposure to climatic discomforts. Every one desirous of being independent of the vagaries of our changeable and deceptive climate would do well to make themselves practically acquainted with the advantages of the BURBERRY WEATHER PROOFS.²

We have recently tested one of the "Slip-ons," which we can strongly recommend, not only for open-air patients, but for practitioners and all requiring a hygienic weather-proof protector for sport, travel, or country wear. We have examined the "interlining"—a special feature of these garments—allowing of additional protection to exposed parts, with a minimum increase in weight by the ingenious combination of wool and silk. In the Burberry specialities are combined pleasing appearance, lightness, strength, durability, and comfort, and absolute weather-proofness, with perfect ventilation. As uniting hygienic requisites with utilitarian requirements these goods can hardly be excelled.

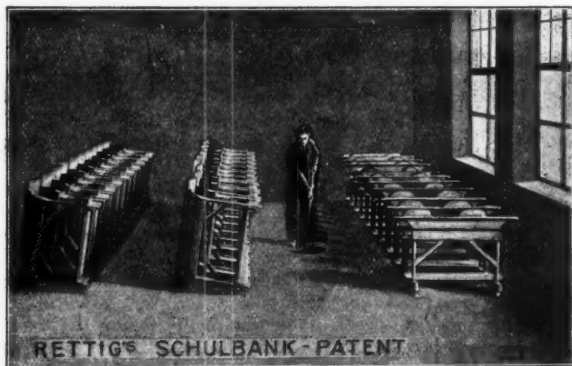
REQUISITES FOR THE SCHOOL AND HOME.

In the important exhibition held in connexion with the recent International Congress on School Hygiene in London the Doecker school pavilions attracted much attention. The arrangements for the opening of school windows and ventilators were highly ingenious and

¹ Dr. Deimel's underwear is supplied by the Deimel Fabric Co., 83, Strand (Hotel Cecil), London, W.C.

² Full particulars concerning the Burberry garments may be obtained in "The Burberry Proof Kit," seventeenth edition, published by Burberrys, London Street, Basingstoke. London Depot: 30 to 33, Haymarket.

deserving of much praise. Messrs. Christoph and Unmack,¹ the manufacturers, for the excellence of their hospital buildings, constructed on Doecker principles, have been awarded the highest prize in the International Red Cross Conference held in London this summer. Through the courtesy of their London representatives we are enabled to reproduce an illustration of their admirable "RETTIG" desks, which,



"RETTIG" SCHOOL-DESKS.

in addition to being thoroughly rational in construction, have the special feature of being connected by hinges to iron rods, which, however, are not fixed, but allow, as is readily seen from the accompanying figure, of the thorough cleansing of the floor beneath, as well as those portions of the desk which are usually neglected.

In the prophylaxis of tuberculosis, much attention is very rightly being given to the rational employment of physical exercises. We have lately had an opportunity of examining the gymnastic apparatus manufactured by the well-known house of Spencer, Heath and George, Ltd.² This firm has sent us its illustrated list of appliances for anthropometric investigation, which should be known to all school doctors.

The instruments invented by Professor Matthew Hay of Aberdeen,³ and used in Scotland in connexion with the medical inspection of school-children for the Royal Commission on Physical Training, will be found of service in the investigation of the physical condition of children in schools and sanatoria of this country.

The preparation and cleansing of floors is a matter of the highest sanitary importance. Messrs. Lewis Berger and Sons⁴ supply several excellent preparations of floor-paints, wax, and seam and crevice fillers.

¹ Messrs. Christoph and Unmack, of Niesky, Germany, and Bunzendorf, Bohemia, Austria, have as their London representatives Messrs. Hasserodt and Co., 31, Queen Street, E.C.

² Messrs. Spencer, Heath and George, Ltd., 18, 48, 52, Goswell Road, London, E.C., will supply an illustrated list of their appliances and apparatus.

³ Manufactured by A. and J. Smith, Maxwell House, Aberdeen, N.B.

⁴ Full particulars concerning floor preparations can be obtained from Messrs. Lewis Berger and Sons, Ltd., Homerton, London, N.E.

Their "FLOOR-COTE" stains and varnishes in one operation, is very durable, takes a high finish, and can be had in various colours. All these preparations will be helpful in the maintenance of anti-tuberculosis measures.

FLORIGENE¹ is another useful preparation in preservation of floors. It is an odourless fluid, easily applied to all kinds of wood floor, linoleum, cork-matting, mosaic tile, and other paving. For schools, hospitals, and public institutions of all kinds, as well as for domestic use, it should prove invaluable.

The lighting of sanatoria and private homes is certainly most hygienically and conveniently met by the employment of the electric light; but where this is not possible, and gas is available, excellent results can be obtained by the use of suitably protected incandescent lights. Among the various forms of mantle now available, the "LADDITE"² offers many advantages. It is not readily affected by vibration, gives a soft and pleasing light of high candle-power, is strong, durable, and is not costly.

Mention may here be made of the well-known preparation "SECCOTINE,"³ which in the sanatorium and the home will be found invaluable for the speedy repair of many little breakages.

A good Fountain Pen is a *sine qua non* for every sanatorium patient and to all who practise open-air methods. Among the now numerous claimants for favour, the long-established SWAN⁴ well maintains its position as an efficient and thoroughly convenient pocket companion.

THE PREPARATION OF FOOD.

The average cook, whether in hospital, sanatorium, or the home, is too much the slave of rule of thumb, and looks askance at all new appliances for facilitating hygienic cookery. To all such, as well as to cookery experts and those on the look out for labour-saving and scientific means for more rationally preparing material for the table, we strongly commend the BOILERETTE, invented by Mr. Wellbank.⁵ We have submitted the boilerette, both in its round and oval forms, to thorough testing, and can speak in the highest terms of it as an ideal cooker. It is strongly made, convenient to work, readily cleansed, economical in use, and can be employed over ordinary fires, and most conveniently on gas or oil stoves. For hospitals, sanatoria, and institutions of all kinds it will be found invaluable. It is extremely simple in construction, consisting of an inner receptacle in which the food is placed, encased in an outer jacket of steam, which is self-regulating by means of a safety-valve. These ingenious cookers only need to be known to be appreciated.

¹ Florigene is supplied by the "Dust Allayer" Co., 165, Queen Victoria Street, E.C.

² The "Laddite" Incandescent Mantle Co., Ltd., 192 to 194, Audrey House, Ely Place, London, E.C.

³ Seccotine is manufactured by McCaw, Stevenson and Orr, Ltd., Linenhall Works, Belfast, and 31 and 32, Shoe Lane, London, E.C.

⁴ The Swan Fountain Pen can be obtained in different sizes and qualities, full particulars of which are obtainable from Messrs. Mabie, Todd and Co., 79 and 80, High Holborn, London, W.C.

⁵ Further particulars concerning the Wellbank Boilerette can be obtained from the inventor and manufacturer; R. W. Wellbank, Duplex Works, Banbury. London depot: 105, Newgate Street, E.C.

HYGIENIC AND MEDICINAL PREPARATIONS.

IZAL¹ has been shown by Professor Sheridan Delépine and Dr. F. J. H. Coutts to be an efficient disinfectant of tuberculous products, and it is now available not only in disinfectant fluid form, but in a valuable series of sanitary, toilet, and medicinal preparations. Dr. Colin Campbell advocates the employment of Izal in the form of intra-tracheal injections, and in cases of bronchitis and other pulmonary affections it may often be administered internally with advantage.

The firm of J. and J. Colman, Limited, of Norwich, well known the world over for the purity and excellence of their mustard, have now introduced a form of MUSTARD BRAN, and also a preparation of concentrated MUSTARD OIL,² both of which will be found of considerable service as convenient and effective counter-irritants, and will no doubt be extensively used in sanatoria and elsewhere for the alleviation of pleuritic and muscular pains, so common among consumptives and those undergoing open-air treatment. It is well to remember that mustard added to a hot bath often acts beneficially as a tonic and restorative.

Among the now numerous natural mineral aperient waters clamouring for popularity, the advantages of the long-established and justly valued FRIEDRICHSHALL³ are in danger of being overlooked. It possesses mild alterative and aperient properties due to the presence of sulphates and chlorides of sodium and magnesium. Among many inmates of sanatoria, constipation and derangements of digestion often prove sources of much trouble, and for many of these Friedrichshall might be used with much advantage.

Large numbers of tuberculous cases are the subjects of dental caries and pyorrhœa alveolaris, and there is no doubt that many of the gastrointestinal troubles and general anæmia of these cases are—at least, in part—dependent upon oral sepsis. Proper toilet of the mouth should be insisted upon in all cases. Among the numerous excellent forms of dentrifice now available, the SOZODONT⁴ powder and liquid are pleasing and effective preparations which, after personal investigation, we have no hesitation in recommending.

NEBULIZERS, SPRAYS, AND VAPORIZERS.

These appliances are essential to the conduct of every sanatorium, and though the varieties available are numberless, those that may be classed as convenient and efficient are comparatively few. In a former number we recommended the excellent "GLASEPTIC" NEBULIZER introduced by Messrs. Parke, Davis and Co.⁵ This firm has now favoured

¹ Izal preparations are manufactured by Newton Chambers and Co., Ltd., at Thorncliffe Works, near Sheffield. Their London office is at 331, Gray's Inn Road, W.C.

² These preparations are manufactured by J. and J. Colman, Ltd., of Norwich. London office: 108, Cannon Street, E.C.

³ The proprietors of Friedrichshall Waters are Messrs. C. Oppel and Co., of Friedrichshall, Saxe-Meiningen. Their London office is at 10 and 12, Milton Street, E.C.

⁴ Sozodont preparations are supplied in this country by Messrs. John Morgan Richards and Sons, Ltd., 46, Holborn Viaduct, E.C.

⁵ Messrs. Parke, Davis and Co.'s London address is 111, Queen Victoria Street, E.C.

us with specimens of their "GLASEPTIC" SPRAY, which, except for its indiarubber bellows and tube, consists of glass in one piece, strongly made, with no faulty joints, easily cleansed, and permitting of thorough sterilization. We find that it gives an abundant spray, finely subdivided. It is specially intended for aqueous and alcoholic solutions, and we strongly recommend it as a reliable means for the topical application of medicaments in affections of the throat and nose.

The "GLASEPTIC" Pocket NEBULIZER, a miniature of the larger nebulizer, is intended mainly for nasal use, and will be much appreciated by the subjects of hay-fever, nasal catarrh, and other similar affections. It will, however, be of service in the control of cases of asthma, bronchitis, and pharyngo-laryngeal catarrh.

The Sanitas Products are now available in almost every form required by the sanitarian and therapist. We have recently had an opportunity of testing the improved FUMIGATOR,¹ in which Sanitas and Sanitas Oil can be conveniently vaporized. It is a cheap, simple, effective, and readily cleansed apparatus, well adapted to the requirements of bronchitic and other respiratory sufferers.

¹ The "Sanitas" Fumigator is manufactured by the Sanitas Co., Ltd., Locksley Street, Limehouse, E. Price 2s. 6d.

NOTES AND NOTICES.

ANTI-TUBERCULOSIS workers throughout the world have to deplore the loss of two indefatigable and highly-honoured leaders. Sir William Broadbent was an able student of the tuberculosis problem, a valuable contributor to its literature, and a prominent advocate for, and supporter of, all measures seeking to prevent the disease and alleviate its sufferers. Professor J. J. Grancher has won world-wide distinction for his work in the preservation of childhood from the ravages of tuberculosis: he has established principles and demonstrated methods which promise to be of inestimable value, not only to the children of France, but to the little people of all nationalities.

OPEN-AIR TREATMENT OF BABIES.

Rapid strides are being made in the application of hygienic principles to the care of child life. At the Bristol Temporary Home and Lying-In Hospital open-air methods are being employed with great success



NEW-BORN BABIES' OPEN-AIR CART.

in the bringing-up of infants. Through the courtesy of the editor of the *Nursing Times*, we are able to reproduce an interesting illustration of the open-air cart there employed. The infants are brought straight from the labour-room and placed in this large, broad perambulator, which is also furnished with an awning, and here they remain in the open all day long in the summer and for a part of almost every day in the winter. We are glad to find that in the artificial feeding of these infants there is no absurdly excessive dilution of the milk given. We know of at least one open-air baby who was brought up on fresh air and undiluted, unsterilized pure cow's milk with perfect results.

CONGRESSES DEALING WITH TUBERCULOSIS.

At several important recent gatherings of medical practitioners, sanitarians, and others interested in racial betterment, the tuberculosis problem has very rightly received prominent consideration. At the International Congress on School Hygiene held in London in August, the question of tuberculosis in schools and among children and teachers was discussed. The need for advance in our anti-tuberculosis measures was also insisted upon at the annual meeting of the British Medical Association at Exeter. Through the courtesy and forethought of Dr. E. Lust, the Secretary-General of the second "Congrès International des Gouttes de Lait," held at Brussels in September, we have been favoured with advanced copies of many of the reports and papers there to be presented, and we are glad to find that a number of most informing and suggestive communications bearing on the protection of infants from tuberculosis are to be presented. The completed volume of reports promises to be a work of exceptional interest and value to all concerned with "Protection de l'enfance du premier âge."

At the very representative Congress on Hygiene and Demography held in Berlin from September 23 to 29, measures for combating tuberculosis and methods for dealing with its victims were fully discussed. For this important gathering a number of works were specially prepared, including an official volume on "The German Empire in reference to Health and Demography"; a "Festschrift" prepared by the city of Berlin; and a "Hygienic Guide" issued by the Hygienic Institute of the University of Berlin and the Berlin Institute for Infectious Diseases.

At the Sixth International Tuberculosis Conference, held in Vienna, September 19 to 21, important discussions took place on channels of tuberculous infection, compulsory notification, cost of sanatoria, and other subjects bearing on practical aspects of the tuberculosis problem.

ESTABLISHMENTS FOR TUBERCULOUS CASES IN GERMANY.

Our much-valued collaborator, Dr. Nietner, the energetic Secretary-General of the recent Fourteenth Congress of Hygiene and Demography at Berlin, has made a record of the various institutions which are rendering active service in the Fatherland in caring for tuberculous patients. It is estimated that there are at the present time: 87 popular sanatoria with 8,422 beds (5,472 exclusively for males, 2,658 for females, and 292 used for either sex), 35 private sanatoria with 2,118 beds, 17 sanatoria for tuberculous children with 650 beds, and 67 establishments for the treatment of scrofulous, etc., children with 6,092 beds. There are 11 popular sanatoria now in construction, which will give 800 additional beds. Further, there are 10 special homes for treatment (2 more under construction), 2 rural colonies, 67 forest convalescent homes, 117 offices for information and assistance, as well as about 90 anti-tuberculosis committees of equal value in the Grand duchy of Baden, 3 forest schools, and, lastly, 4 special establishments for the cure of lupus.

OPEN-AIR SCHOOLS FOR CHILDREN.

As we endeavoured to indicate in our last issue, the most practical and necessary means for lessening tuberculosis is to concentrate all available energies on the protection and preservation of the children. Germany has set the world a common-sense and strictly scientific example in the establishment of forest schools for tuberculous and



FOREST SCHOOL, NEAR CHARLOTTENBURG, GERMANY.

Consisting of a School Pavilion, a Building for Domestic Purposes, and a Recreation Hall. Constructed according to the Doecker System.

tuberculously disposed children. It is to be hoped that England, America, and all civilized countries will speedily follow such a rational and successful lead.

At the recent "Country in Town Exhibition"¹ held in the Whitechapel Art Gallery—a type of exhibition which should be held in every town in the land—a very instructive model recreation-ground was exhibited by Miss A. C. Sewell, of Ivy Cottage, King's Langley, and photographs of the same were shown at the recent exhibition held in connexion with the Congress on School Hygiene in London.

¹ Full particulars may be obtained from the Hon. Secretary, Mr. Henry E. Turner, Toynbee Hall, 28, Commercial Street, Whitechapel, E.

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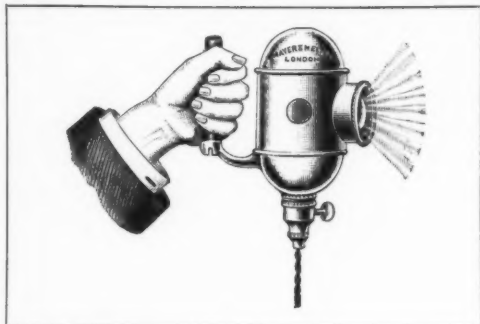


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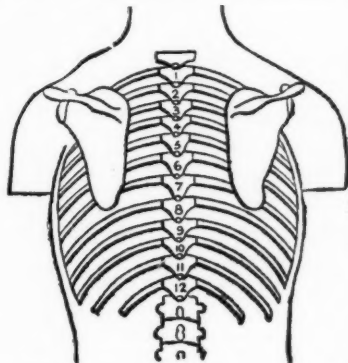
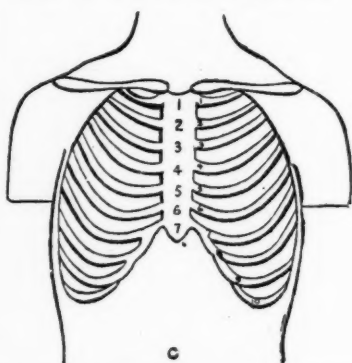
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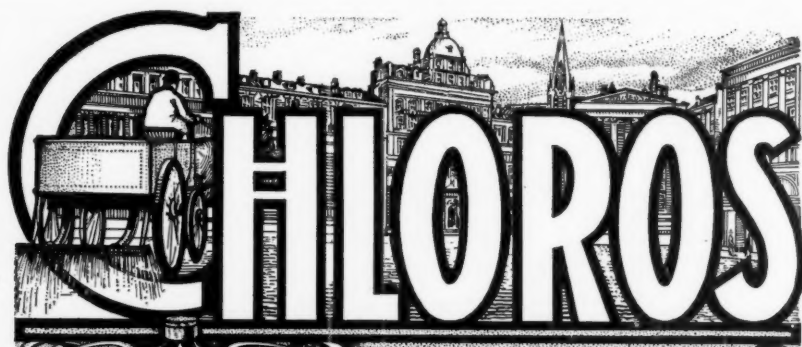
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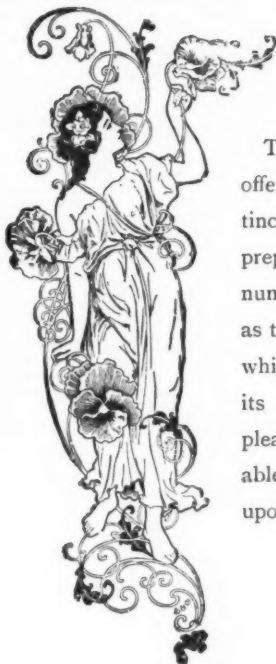
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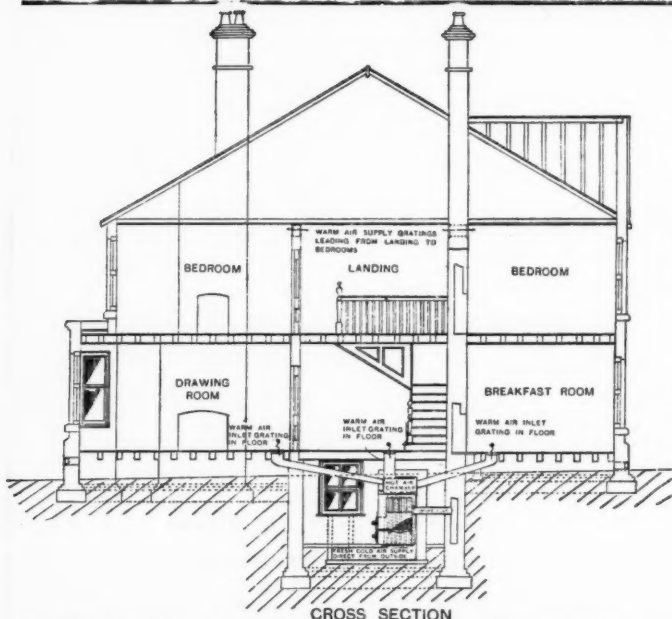
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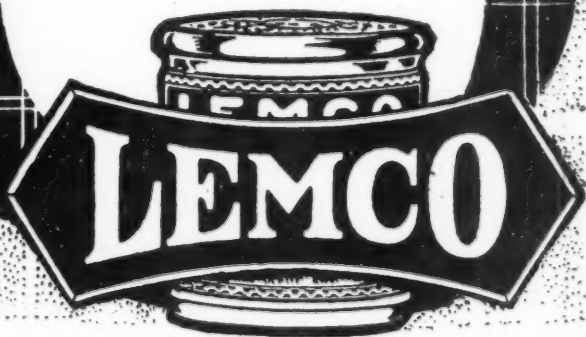
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"Direct experiment demonstrates that Sanatogen increases the albumin content of the blood to the amount of 200 mg. in 100 c.c."—Dr. Chajes, in *British Medical Journal*, December 10, 1904, Epitome, page 87.

"The red corpuscles of the blood increase at the rate of about 10,000 per c.mm. daily in cases of anæmia taking Sanatogen."—*Medical Press and Circular*, November 2, 1904, page 457.

"Conditions of great deficiency of hæmoglobin show improvement varying from 10 to 20 per cent. after a fortnight's use of Sanatogen."—Dr. Eduard Rybiczka, in Hofrath von Schrötter's Clinic, published in *Wiener Klinische Wochenschrift*, 1900, No. 9.

"Sanatogen, on account of its being very easily absorbed, and of a perfectly non-irritating character, may be used with great advantage—that is, for the purpose of increasing the nutritive value of a given diet—in all cases of physical weakness, especially in those of a chronic nature, as well as in the acute stages of all those maladies which are accompanied by high rise of temperature."—Dr. C. A. Ewald, in Dr. von Leyden's *Zeitschrift für Diätetische und Physikalische Therapie*, 1903-4, Vol. vii., No. 10.

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In view of the great practical importance of obtaining some trustworthy and simple means of disinfecting this organism in its most common envelope, and of determining its absolute as well as its relative efficiency, Dr. Klein undertook for the Incorporated Society of Medical Officers of Health "to ascertain the best practical method of destroying such tubercular bacilli as might be found on the floors of public houses, railway carriages, and other public places." The final results of Dr. Klein's experiments, which were conducted on dry tubercular sputum inoculated into guinea-pigs, is reported in *Public Health*, the Journal of the Society (October, 1904), and his conclusion is:—

"Cyllin in the proportion of 1 : 160 acting on tuberculous sputum for six hours at room temperature is capable of disinfecting all *B. tuberculosis*."

In the case of a floor or other surface on which dry tuberculous sputum may be present, Dr. Klein adds : **"For practical purposes, therefore, it would only be necessary, when working with this disinfectant, to wash with a mop the floor, using a dilution of 1 : 160, and to leave the floor thus well moistened for a period of six hours."**

This statement has been well emphasized because it seems to show that, having regard to the permanence and non-volatility of Cyllin, it offers, perhaps for the first time, a really practicable means of using the art of disinfection in the daily current control of tubercular infection. Dr. Klein's result was obtained on dry tubercular sputum—that is to say, on tubercular infection surrounded by much the same sort of envelope as surrounds it when reduced, as in the usual process of infection it is reduced, to the form of dust. The degree of protection afforded in this way is considerably greater than in the case of moist sputum well mixed with the disinfectant, as the organism seems when dry to offer much greater resistance than when moist. Dr. Klein's experimental conditions represent, therefore, the maximum of resistance to disinfection which the bacillus is likely to display in practice; and his results show, accordingly, that disinfection of the tubercle bacillus can be effected on any surface, whether moist or dry, by applying Cyllin 1 : 160† with a scrubbing-brush or hard broom, to ensure that any masses of moist sputum are sufficiently broken up, and leaving the surface moist with the disinfectant for six hours. It is probable that most surfaces calling in practice for disinfection would be sufficiently dry to be treated with a mop in the manner recommended by Dr. Klein for surfaces on which the sputum has been dried; but in cases where any doubt exists as to the presence of undried masses, the scrubbing process offers a simple means of avoiding any uncertainty, provided the surface is left thoroughly wet with the solution for the period in question.

From the experiments already mentioned, it has been made apparent that these beneficial results can be obtained by the use of Cyllin, in the proportion of six table-spoonfuls to each pail of water, containing three gallons; to obtain the same germicidal results with carbolic acid, two and a half pints would be necessary for the same quantity of water.

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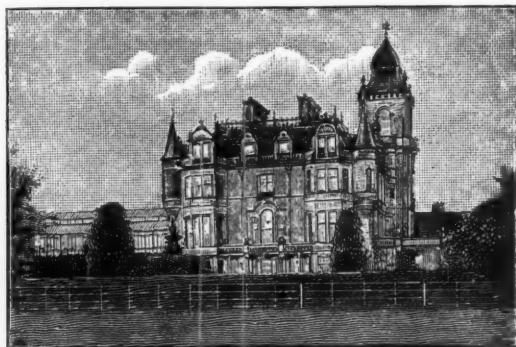
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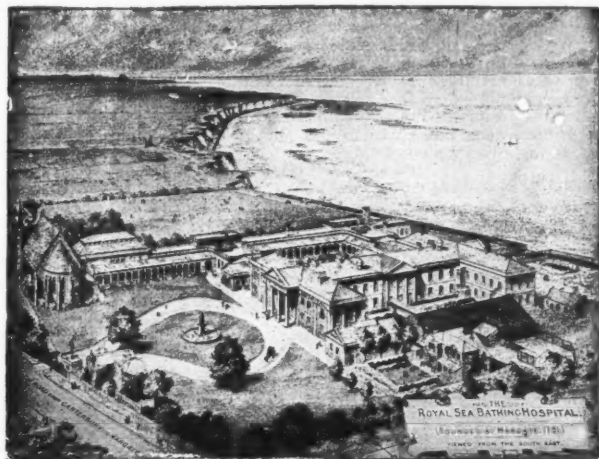
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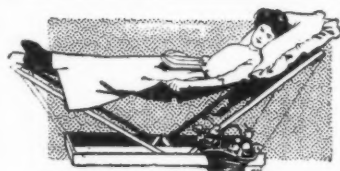
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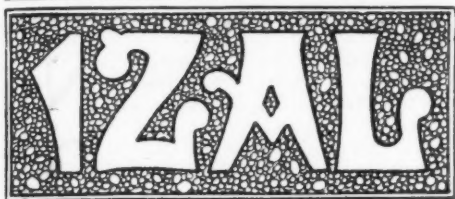
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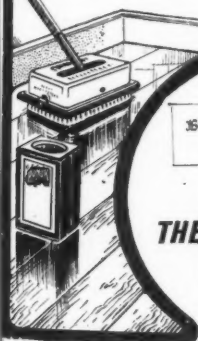
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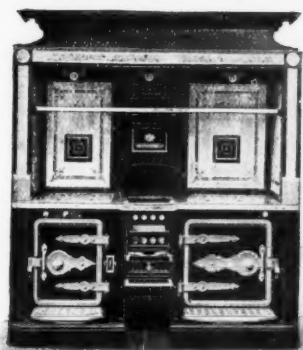
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